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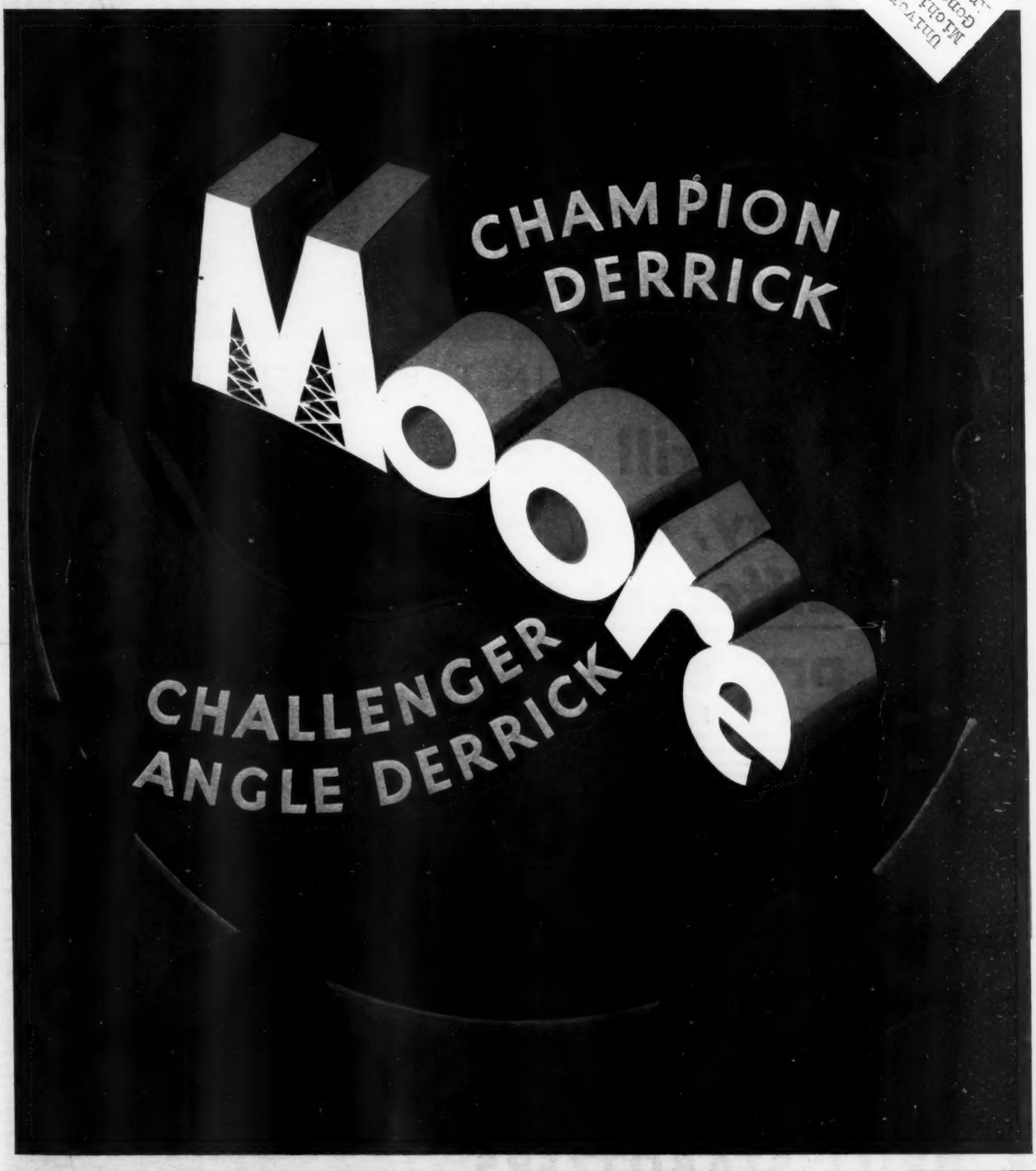

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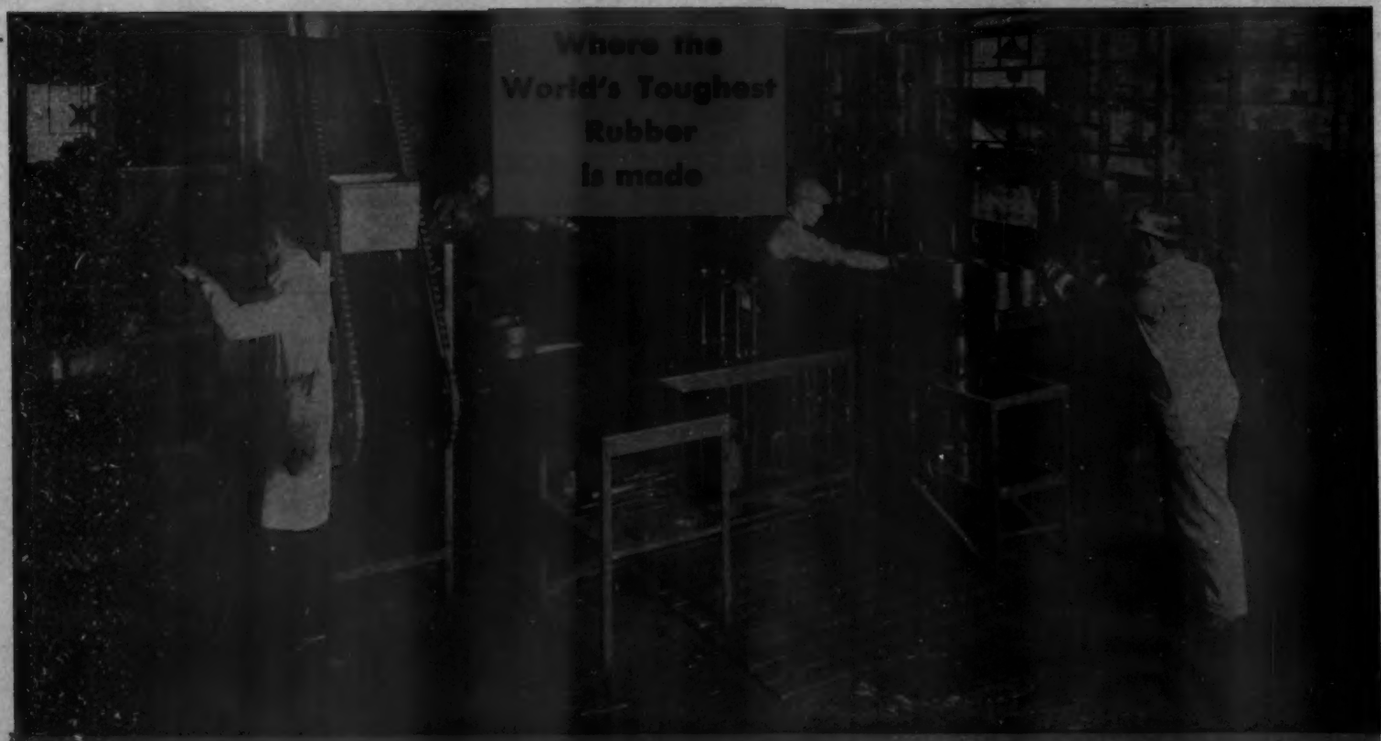

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The OIL and GAS JOURNAL

PRODUCING REFINING PIPELINE ENGINEERING MARKETING

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Low Prices Clearing East Texas Chaos

Highest production in 1930, week ending Feb. 22, average daily output 2,699,096 bbls. Peak of U. S. production, week ending Aug. 24, 1929, average 2,975,435 bbls.

Higher Crude Prices Expected to Be Announced in California This Week. General Outlook Is Somwhat Brighter

By Andrew M. Rowley

Lowest daily average crude oil production in the United States during 1930 was for week ending Dec. 27 with average output of 2,144,074 bbls.

The leaven of below-cost-of-production prices is working on East Texas producers and royalty owners and the chaotic situation now obtaining in that area, with resultant ill effects on the oil industry everywhere, may be brought into some kind of order by the end of this month. Legislation designed to make proration orders effective probably will be enacted at the special session of the Texas legislature and it is believed a two-thirds majority of the legislators will favor such a law, making it an emergency measure, effective immediately upon signature by the governor.

No compromise should be made in the figure of allowable production from East Texas. The present high production there resulted from wilful violation of original proration orders. Not only should this be considered in deciding upon an allowable under enforceable orders but the quantity of overproduction since the original order was issued should be deducted from quotas permitted under new regulations.

It is believed crude oil prices will be raised in California this week, following enactment there of adequate legislation bolstering conservation of the State's petroleum resources. It is reported the former policy of paying highest prices for highest gravities will take the place of the present schedule which provides the highest prices for the lowest gravities. A top figure of 85 cents a barrel is reported as the contemplated new price. Such action on the part of California companies should give East Texas operators further food for thought.

Crude oil prices throughout the nation should be increased immediately upon a straightening out of the East Texas muddle. Prices of refined products should be raised in proportion. No improvement can be had at present prices and the first step towards better conditions must of necessity be higher prices.

It takes a real optimist to see anything bright in the present situation, but there is a time when any change must be for the better. Such is the condition now and a slow, but steady, improvement can be expected from this time.

PRODUCTION IN THE UNITED STATES

Estimated daily average production of crude oil in the United States for week ended June 6 and a comparison with the previous week follows:

	June 6	May 30
Oklahoma—		
Oklahoma City	174,920	132,985
Seminole-St. Louis	139,615	155,860
Remainder of State	237,605	238,590
Total Oklahoma	552,140	527,435
East Texas—		
Kilgore	165,600	156,100
Lathrop	66,700	71,000
Joiner	119,200	123,800
Total East Texas	351,500	350,900
West Texas	211,236	212,181
North Central Texas	79,408	80,703
Texas Panhandle	60,046	61,749
East Central Texas	56,750	55,600
North Louisiana	37,770	38,655
Arkansas	45,705	46,245
Kansas	106,750	106,710
Total Mid-Continent area	1,501,305	1,480,178
Gulf Coast	171,750	173,350
Southwest Texas	65,750	60,500
Eastern	110,000	111,000
Rocky Mountain area	97,468	100,419
California—		
Santa Fe Springs	69,000	72,250
Long Beach	84,000	86,000
Playa Del Rey	30,000	28,500
Elwood	35,500	34,000
Kettleman Hills	44,000	45,500
Remainder of State	265,000	271,500
Total California	527,500	538,750
Total United States	2,473,773	2,464,197

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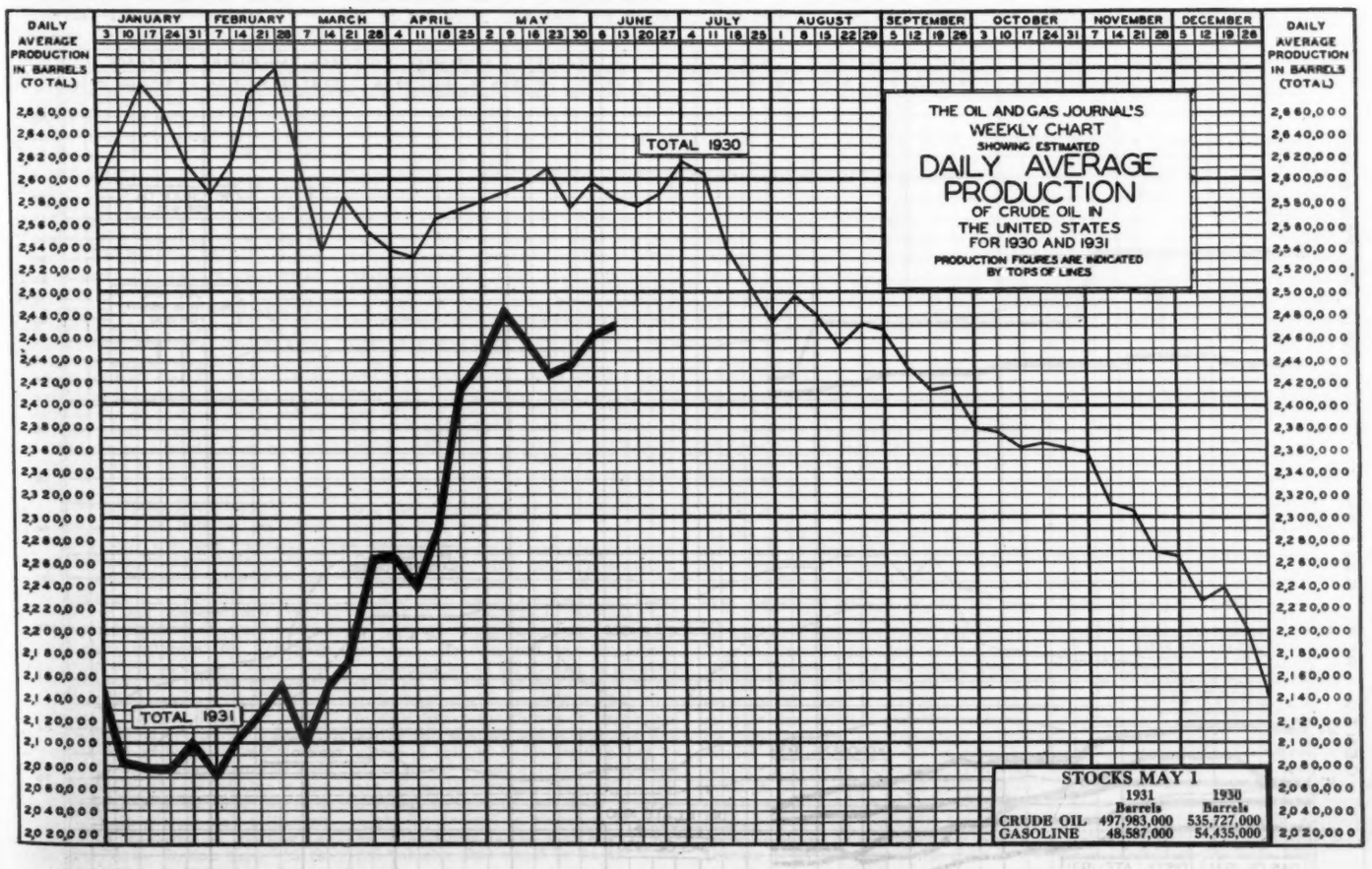


Lower Levels in Refinery Quotations

Oklahoma Sellers Continue to Reduce Prices. Low Crude Schedules May Result in New Plants

By C. O. Willson

Practically the entire refinery list in the Oklahoma (Group 3) market continued to sag during the past week. Neutral oils, steam refined stocks and bright stocks joined the light oils in price declines, establishing new low prices for these products, some of which are now being quoted at the lowest levels in the history of the Mid-Continent Field.

Buyers immediately sought lower prices when the new crude price schedules were announced the past week and enough sellers acceded to their wishes to bring about reduced prices on the principal products. In addition to the spot sales, considerable material has been sold over the month at present prices and no immediate improvement in conditions is expected.

Reports from the several refining areas in the Mid-Continent Field during the past week show that the recent price reductions in crude oils are to result in substantial increases in crude oil runs to stills. Although as shown in The Oil and Gas Journal monthly survey, which is published elsewhere in this issue, a large part of the increase comes from the new plants in the East Texas fields, runs have been increased at a number of the older plants.

In this connection there have also been a number of small plants built in other areas. Since early in the year there have been reports of new plant construction as far west as New Mexico. Most of these plants are small skimming units having a capacity of 200 to 1,000 bbls. daily. In some cases they have been built to serve a local trade. Usually they are made possible because a producing organization has been unable to secure outlets for crude oil due to proration agreements and is willing either to finance a refinery project or guarantee the refinery owners a crude cost which will assure an operating profit for the plant. There are a number of these small plants in Texas.

Ordinarily these plants would have little market significance. With the Mid-Continent generally weak they are now a factor. It is probable that the number and size of these plants will increase over the next few months provided posted schedules on crude oil continue low. This development is a certainty if the new East Texas fields are permitted to expand without any form of effective proration.

More Plants

One refinery operator familiar with the East Texas situation predicts that 20 to 25 refineries will be built in that area if the field is developed as fast as wells can be drilled. This prediction is based on the fact that the many producers either would not be able to find outlets for their crude oil production or the prices offered by outside refiners would be so low that they would not be acceptable. For instance, this operator points out that a company drilling 16 wells has an investment in producing properties of at least a half million dollars. For $100,000 to $200,000 the company can build a temporary plant which will skim 5,000 bbls. of the East Texas crude oil daily. With its own refinery the company would at least have an outlet for its crude oil and might later be in a position to buy crude oil from other producers and run it through its plant at a profit.

This situation is not confined to East Texas. There are other pools in the Mid-Continent where the allowable production is only a small fraction of the potential production and operators are anxious to secure additional outlets. The attitude taken by these operators is that the crude oil prices have dropped to such low levels that additional outlets for their wells are necessary in order to justify operation. It is known that sizeable refinery projects are under consideration for the Texas Panhandle, Oklahoma City and Kansas points.

Whenever these projects are discussed it is generally pointed out that there are a number of plants in the Mid-Continent which have been operating for several years which are available. Unfortunately, however, they are not located adjacent to the flush fields where the additional outlets are sought. Due to the low prices prevailing in the refinery markets rail rates on tank car shipments of crude oil to plants are prohibitive when made over any distance, and this means that new plants must be located adjacent to the fields so that transportation costs can be reduced to a minimum.

At this writing final efforts are being

(Continued on Page 127)

REFINED MARKET BAROMETER

Reductions in refinery prices on several products were made over wide areas during the past week. Refinery gasoline quotations continued to reflect weakness, a condition brought about by low crude oil prices. Reports indicated an encouraging seasonal increase in gasoline consumption. Natural gasoline prices were unchanged both in the Mid-Continent and California. Fuel oil price declines were featured by a 10-cent reduction in Bunker C at Coastal points extending from the Gulf Coast to Canada. Diesel oil prices were reduced at the same points. Kerosene quotations were reduced both for export and domestic movement. Gas oils and distillates dull. The principal price reductions in steam refined stocks, bright stocks and neutral oils were in the Mid-Continent Field.

Mid-Continent—Refinery gasoline prices generally lower. Kerosene prices reduced. Demand for fuels including gas oil and distillate slow and prices lowered by several companies. Natural gasoline unchanged. Cylinder stock and neutral prices lower. Wax unchanged.

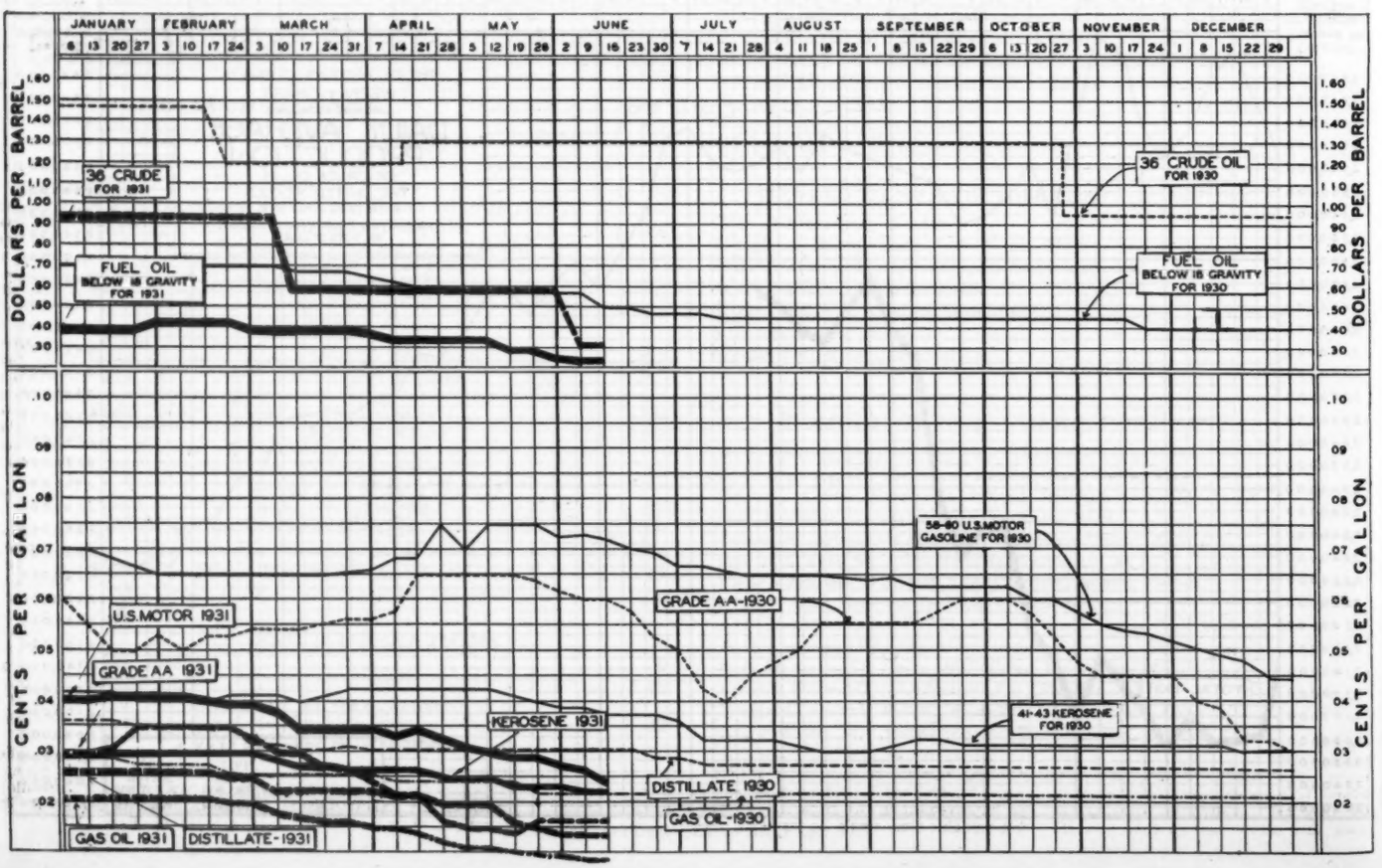
East Coast—Reduction of 10 cents in fuel oil and Diesel oil prices. Gasoline market weak. Kerosene inactive. Some grades of cylinder oils reduced. Slow demand for wax.

Chicago—Gasoline, fuel oil and kerosene prices generally lower. Gas oil and distillates weak.

Gulf Coast—Export and domestic quotations on gasoline and kerosene reduced. Fuel oil prices lower. Price reductions in most grades of pale and red oils.

California—No important changes in prices. Expect improvement in gasoline situation later in month.

Pennsylvania—Refinery prices held better than expected following crude oil price reductions. Some grades of neutral oils and bright stocks lower.



A Waste of Valuable Time and Energy

Selfish Motives of Politicians and Newcomers in Oil Business Nullify Efforts to Improve the General Situation

By Andrew M. Rowley

Two vitally important factors have developed quite recently to wield a powerful influence on the destinies of the petroleum industry. The oil business always has had these same factors to contend with but it seems to be just realizing these interests, without any basic investment in the industry, have assumed leading positions in discussions seeking to solve problems besetting the industry and in all publicity relating to these problems.

One of these factors is the politicians who are trying to mend broken political fences or to build up a following at the expense of the oil business. The other is the newcomers in the oil business—the small royalty owner or the owner of a few acres who is interested only in getting all he can and as quickly as possible out of that little piece of ground regardless of the effect upon others or the industry as a whole.

Were it not so tragic to hundreds of thousands of real oil men throughout the United States, the whole thing would seem like a farce. The idea of a few men who know practically nothing about the oil business and who were practically nonentities until someone discovered oil on their land, now trying to tell a big basic industry of the world how to run its business is as absurd as the plot of a burlesque show. Yet, that is exactly the situation which obtains at this time.

Time for Political Interest

The oil industry always can expect a lot of interest in its affairs from politicians and those seeking political preferment during political years. It is an old story to have a lot of demagogues ranting about the "oil octopus trying to strangle the dear public" and for others, whose sole knowledge of the oil business is gained from some motion picture of a gusher, to burst forth with plans for investigations and fantastic schemes to change the whole order of things.

This is the beginning of the regular period for such ravings and the agitation will become greater as the time for elections gets closer.

Because of the condition of the petroleum industry at this time and the widespread publicity given to its problems and troubles, it behooves those engaged permanently in the oil business to squash the demagogue as quickly as possible after he bursts forth.

The royalty owner and small leaseholder is just as selfish in his attitude. He has visions of becoming wealthy over night and he will do everything to achieve this desire without regard to the effect on his neighbors or anyone else. He is too ignorant of the oil business or too selfish to see that what is good for the petroleum industry as a whole must be good for him as long as he has a part in that industry.

Efforts Being Handicapped

Leaders of the oil industry are devoting most of their time now to trying to place the facts of the problems confronting the business before these new producers and royalty owners and the public. These efforts are hindered and handicapped by politicians not now in office and, in some instances, by politicians whose terms soon expire and who intend to run for re-election. These politicians, in the first instance, are doing all in their power to discredit those now holding political office and are trying to lay the background for campaigns in which they will claim the officeholders failed in their mission so far as the oil industry is concerned. The reason for their tactics is obvious both to oil men and politicians. But they are counting on swaying the public just before election time. In the meantime they are trying to nullify all efforts to achieve just what they later will claim should have been done.

Efforts of the oil industry to calm the waters troubled by politicians and the new producers have not as yet met with great success. Sincere endeavors to do the best thing for all concerned have been misunderstood either wilfully or selfishly. The question now arises what to do under the circumstances.

The industry should realize it cannot expect any constructive aid or help in solving its problems from politicians. It also should know by this time that the little royalty owner or leaseholder cannot be depended on to abide by any agreements regarding curtailment of production. Circumstances may force him to do so for a brief time but as soon as he has a chance, he will abrogate such agreements and cause a recurrence of conditions which previously existed. He has no permanent interest in the petroleum industry any more than has a politician.

Conduct Own Business

The time has arrived for leaders of the oil business to define their own policies and conduct their own business as their experience shows them it should be conducted. If they need crude from a flush field—take it. If they do not need it, retire from that field as a purchaser and let the owner of the production find his own market. If pipe line connections were not made to new wells, the production from those wells would have a hard time getting to market. If companies with a large production of their own—both actual and potential—and with reserves of crude and gasoline in storage would refuse to purchase any crude, there would not be as great a market for the producer whose output is flooding the industry now.

In other words, why should a big basic industry give so much time and attention to those who have such a small interest in it and that interest mostly through accident and certainly through but little if any effort on their own part? Why should the oil business stand aside or wait for those with a more or less selfish interest to do something to help it?

The oil business will have to solve its own problems and solve them without regard to the effect such solution will have on this pygmean minority. Then and then only can the great bulk of oil men hope to see some improvement in conditions affecting the industry as a whole.

TEXAS LEGISLATURE WILL CONVENE JUNE 22 TO CONSIDER PRORATION

By Special Correspondent

AUSTIN, Tex., June 8.—Rep. Ray Holder, of Dallas, chairman of the House Education Committee, announced here Sunday that Gov. Ross S. Sterling had just informed him the governor intends to reconvene the legislature in special session June 22 for the single purpose of acting on oil conservation.

Representative Holder said the governor predicted the oil industry would have its views clarified out of a meeting in Dallas today and the legislature would be ready by June 22 to take whatever action is to be taken on proration.

Carl Estes, chairman of the East Texas antiproration forces, announced here in a statement issued through his counsel, former governor Dan Moody, that Estes has asked Governor Sterling to appoint a committee of East Texas citizens to prepare a valid conservation order under which East Texas production will be curtailed. Estes asserted that attorneys of major oil companies have advised the companies the present conservation orders are unenforceable.

Dallas Meeting Crystallizes Views

Large Committee of Texas Oil Men Selected to Direct Efforts to Improve Situation Caused by Overproduction

DALLAS, Tex., June 8.—Steps to correlate all facts and views regarding the overproduction situation in East Texas were taken here today at a largely attended meeting of oil men from throughout Texas. A special committee of 56 was selected to conduct a campaign of education, to endeavor to bring together warring factions in the East Texas muddle and to present to Gov. Ross Sterling facts regarding the situation which would guide the governor and the legislature in framing such additional legislation as may be deemed necessary. These matters will be presented to the governor prior to the meeting of the special session of the legislature which will consider proration matters and what is needed to enforce proration in East Texas.

The meeting here voted almost unanimously for fair and adequate proration of crude oil production in all fields and in favor of a special session of the Texas legislature to enact such additional law or laws as might be deemed necessary to insure enforcement of proration orders.

Co-operation of all oil men in the state in efforts to bring the industry out of the chaos into which unrestricted production in East Texas has thrown it, was urged during the meeting and it was the consensus of opinion in the meeting that no stone should be left unturned in immediate efforts to reconcile the views of the different factions so that quick progress might be obtained in endeavors to effect an improvement in the situation. It was felt valuable time would be wasted if the situation were left to drag along until the legislature had had time to meet, consider the situation and then enact such laws as it felt necessary.

Carl Estes of Tyler, secretary of the East Texas Lease Royalty Owners and Producers Association, was described by Charles F. Roeser, first speaker, as one of the principal reasons for delay in applying proration in East Texas. "I predicted early in the year that if he persisted in his tactics he would cost the landowners of his section of the State $25,000,000," he said. "Now I want to amend that and say that he has cost them $100,000,000.

"When he started his fight against proration, there were leases in the field selling for as high as $2,500 and $3,000 per acre. It is not necessary to tell you how little they would bring today. I predict that it will not be long before he is the most discredited man in his section."

E. A. Landreth of Fort Worth seconded Roeser's stricture of Estes, and named Tom E. Cranfill, president of the Independent Petroleum Association of Texas, former governor Dan Moody and Joe Danciger of Fort Worth and Amarillo as other obstructionists. Governor Moody he condemned for his opposition to the ratable takings law whose passage he had facilitated only a few months before, while in office. Half of the obstructionists, he said, were men who knew nothing of the business. "It was a pity for former governor Moody to get up at this Austin hearing recently and publicly show how little he knows about the oil business."

J. K. Hughes of Mexia, chairman of the East Texas Chamber of Commerce oil committee, told the meeting that the industry is starving and urged that a small workable body be named to go before dissenters, big committees and all others and attempt to bring some immediate relief.

The meeting authorized its committee, on motion of Mr. Roeser, to name two representative oil men from East Texas, two from South, two from West Texas and two from North Texas, to choose four attorneys and draft a comprehensive conservation statute to offer Governor Sterling and the legislature in the event a session of the legislature is convened.

The following were named members of the general committee:

E. L. Smith, Mexia; Malcolm Crim, Kilgore; Ben Laird, Kilgore; H. L. Hunt, Henderson; J. K. Hughes, Mexia; Clifford Mooers, Longview; R. L. Wheelock, Corsicana; H. R. Dickerson, Longview; Guy A. Blount, Nacogdoches; W. L. Todd, Dallas; J. Lewis Thompson, Houston; W. A. Moncrief, Fort Worth; W. C. Trout, Lufkin; L. D. Gilbert, Tyler; Jack Shannon, Fort Worth; E. T. Moore, Dallas; Dr. E. L. Walker, Longview; F. K. Lathrop, Longview; W. C. Windsor, Longview; Al Guiberson, Dallas; R. T. Fair, Tyler; W. D. Tucker, Tyler; Jake L. Hamon, Jr., Henderson; Barney Flynn, Wichita Falls; S. D. McIlroy, Amarillo; E. H. Eddleman, Wichita Falls; R. F.

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"Depletion"—Much Misunderstood Word

Tax Commissioner's Statement Indicates Definition Is of Vital Significance to Validty of the Income Tax Law

"Depletion" is the term applied to the progressive exhaustion of a mineral deposit. "Mineral," in this connection, includes oil and gas. The term has come into frequent use since the advent of income tax laws, national and state, and is frequently misunderstood. This is especially true with reference to the depletion "deduction," or the deduction on account of depletion, which is allowed to the extractive industries in the computation of that "net" income which is the basis of the income tax.

The misunderstanding and the consequent opposition to the depletion deduction arise from a misconception of its true nature and purpose. Such hostility toward it as has been manifested has arisen out of the erroneous belief that it is something in the nature of a gift, a subsidy or a special privilege granted the oil and mineral producers. That it is none of these but, on the other hand, is a logical and necessary recognition of deductible costs and hazards peculiar to the extractive or "wasting" industries and that without recognition the so-called income tax would operate in part, at least, as a tax upon property rather than upon true income and would discriminate against the oil and mineral producer, thus raising serious constitutional questions, is the thesis of this brief discussion.

HE WOULD ELIMINATE OR LOWER ALLOWANCE

Statement by Melven Cornish, chairman of the Oklahoma State Tax Commission:

"The net income tax law should be amended... The Senate amended the income tax bill by providing for the mineral depletion allowed by the Federal Government which is 27½ per cent gross, not to exceed 50 per cent net. The sum total of this is to practically exempt oil and gas companies from income taxation. The new law should be amended by either eliminating arbitrary allowance for mineral depletion or by materially lowering such arbitrary allowances."

"Going" Mineral Concern Uses Up Its Capital Assets

The capital asset of the farmer is his farm. It is a part of the capital from which he derives his income. He may slowly wear it out or reduce its fertility by constant use but, on the other hand, by good husbandry and fertilizer, he may make of it an everlasting asset; even increasing in value while yielding annual returns. In contrast, the oil or mineral producer exhausts his fund of capital assets, namely, his barrels of oil or tons of mineral in the ground, by actual physical appropriation and sale. In the latter case it is not a mere wearing out but a direct conversion of capital assets. The mineral deposit is used up or exhausted by the very operation of the business and unless a replacement fund be created by segregating a portion of the gross proceeds of the sale of the oil or mineral extracted, the producer, upon exhaustion of the deposit, would have nothing left and would be out of business. Oil, gas and other minerals are not restorable like the farm nor replaceable in the sense that recurring crops may be had from the same property.

There is a fairly close analogy between the business of the oil producer and the merchant in one respect. The merchant takes his goods from his shelves and converts them into money. But when he does so no one thinks of charging him an income tax on that part of the proceeds from the sale of his goods which represents the return to him of the original cost of the goods sold. The oil producer takes his barrels of oil from the ground and converts them into money but, as certainly as in the case of the merchant, at least a part of the proceeds of the sale of the barrels of oil represent a return to him of the original cost in the ground of the oil sold. Should the oil producer be required to pay an income tax upon the return to him of his cost of goods sold any more than the merchant should be required so to do? The function of the depletion deduction is to recognize the right of the oil producer to deduct the cost of goods sold before the income tax is applied. The process of finding and determining the cost of the barrels of oil sold by the oil producer is more difficult and contains many more factors because the business of exploring for, finding and producing oil is more intricate, hazardous and complicated, but the principle supporting the deduction is the same as that which permits the merchant to deduct the easily ascertained cost of goods sold by him.

In each instance it is a conversion of capital assets from goods in kind to money and it is necessary to deduct the original cost of the assets from the gross proceeds and then to deduct also the operating expenses of the business as enumerated by the statute in order to arrive at the net income which may be taxed; otherwise it would not be, in its final analysis, an income tax but some other kind of a tax, as such, controlled or affected by other constitutional limitations.

Courts Recognize Cost of Goods Sold as a Necessary Deduction

So well established is the accounting principle that cost of an asset or the capital represented thereby must be deducted in order to arrive at taxable income that we find the courts allowing the deduction even when the tax statute does not specifically provide for it. In construing a federal statute imposing a tax measured by income, the Supreme Court of the United States, in Doyle vs. Mitchell Brothers, 247 U. S. 179-184, said:

"The deductions specifically authorized are only such as expense of maintenance and operation of the business and property, rentals, uncompensated losses, depreciation, interest and taxes. There is no express provision that even allows the merchant to deduct the cost of the goods that he sells.

"Yet it is plain, we think, that by the true intent and meaning of the act the entire proceeds of a mere conversion of capital assets were not to be treated as income. Whatever difficulty there may be about a precise and scientific definition of 'income,' it imports, as used here, something entirely distinct from principal or capital either as a subject of taxation or as a measure of the tax; conveying rather the idea of gain or increase arising from corporate activities. As was said in Stratton's Independence v. Howbert, 231 U. S. 399, 415; 58 L.ed. 285; 34 Sup. Ct. Rep. 136; 'Income may be defined as the gain derived from capital,

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First Well to Go Down 10,000 Feet

New Record Holder of Chanslor-Canfield, Midway Oil Co. Midway Between Ventura Avenue and Rincon Fields

By L. P. Stockman

LOS ANGELES, Calif., June 6.—The Chanslor-Canfield Midway Oil Co., a subsidiary of the Santa Fe Railroad, has the distinction of being the first operator in the world to carry a well below the 10,000-foot level. Progressive drilling has resulted in the establishment of new deep drilling records with clocklike regularity during the past few years, and it is logical to assume that the existing record will eventually be exceeded although it is evident that heavier improved equipment will be required to increase the safety factor because of the excessive costs incident to deep drilling. There are a number of productive areas in California which are especially susceptible to deeper drilling. The prolific Ventura Avenue Field and the highly productive Kettleman Hills Field of Kings County are outstanding examples of areas which will eventually entice operators to eclipse all known drilling records.

The new record holder of the Chanslor-Canfield Midway Oil Co. is about midway between the Ventura Avenue and the Rincon Fields of Ventura County. The Ventura Avenue Field, the Rincon Field and the area containing this new well form three component structures of the major Ventura anticline which sweeps almost due westward from the Ventura Avenue and plunges beneath the waters of the Pacific Ocean in the Santa Barbara Channel. This has led to the assumption that an extensive major accumulation underlies the Santa Barbara Channel and is reflected in a secondary fold containing such fields as Capitan, Elwood, Santa Barbara Mesa and Summerland, all of which are located along the Santa Barbara coast line immediately adjacent to the normal tide line.

The Chanslor-Canfield Midway Oil Co.'s No. 2-A Hobson, the deepest hole drilled to the present time, was carried to 10,030 feet before drilling operations were concluded. It is at the present time being rigged up for a production test and its potentiality should be determined some time during the next few days. The pipe record consists of 795 feet of 18⅝-inch, 4,226 feet of 11¾-inch, 6,640 feet of 8⅝-inch, 7,479 feet of 5¾-inch, in addition to a combination oil string. The oil string consists of 4-inch blank from 7,400 to 7,430 feet, 4-inch perforated pipe from 7,340 feet to 8,300 feet and 3-inch from 8,300 to bottom, 10,030 feet. The perforations on both the 3-inch and 4-inch oil strings are 125 mesh.

Spudded August, 1929

If No. 2-A Hobson is finished as a commercial producer it will form a fitting climax to a long period of persevering effort on the part of Chanslor-Canfield Midway Oil Co. This well, which is located in Section 23-3-24, was spudded in August 16, 1929. Drilling has been continuous since operations were started in 1929, with the exception of a little time lost by mechanical trouble and a delay occasioned by the explosion and fire on July 11, 1930, during swabbing operations. The well was given a production test on September 12, 1930, at 7,479 feet but it made only 240 bbls. on a compressor, 50 per cent of which was water and emulsion.

Extreme care was taken during the course of work and heavy equipment utilized throughout. It is electrically equipped, the motive power consisting of two 25/65 horsepower motors, one for drilling and one for hoisting, although both can be used for hoisting if necessary. The mud pumps consist of two 25/65 horsepower dual rated standard Westinghouse oil field motors. Alternating current is used, the equipment being designed to take 440 volts. No. 2-A Hobson is the second well to be drilled in

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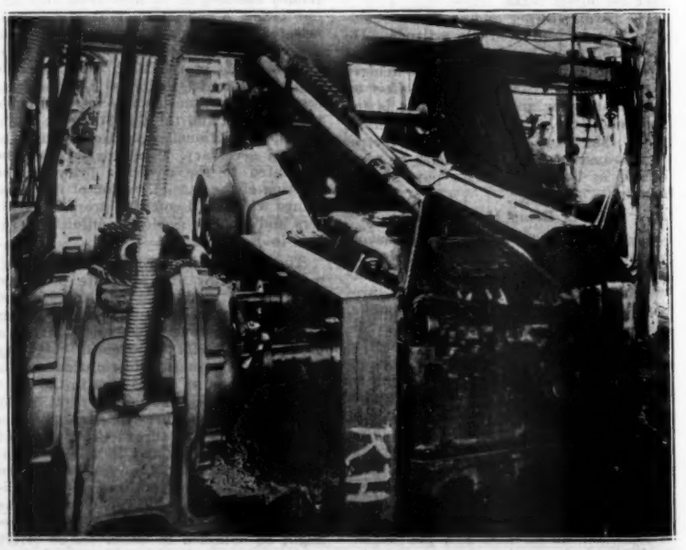

Equipment used on No. 2-A Hobson.

Ratable Taking A.P.I. Meeting Keynote

Chief Topic at Mid-Year Meeting of Division of Production at Dallas. Current Situation Thoroughly Discussed

By L. G. E. Bignell
Petroleum Engineering Editor

DALLAS, Tex., June 6.—Judging from the character of the sessions held during the first annual midyear meeting of the division of production of the American Petroleum Institute in Dallas, June 3 and 4, changes made in the set-up of the organization has tended to secure even better results than under the old methods of operation.

While the midyear meetings of the divisions of production, marketing and refining will not take the place of the regular annual meeting of the Institute held in Chicago each fall, these smaller meetings of the members of the different branches will permit many details to be handled efficiently and facilitate the work at the annual meeting.

Sessions of nearly all of the standardization committees were held on June 1 and 2 ahead of the regular meetings. These committees cleared up a lot of details having to do with standardized equipment and practices. Such details as were not completely finished will have further attention by the committee members this summer and reports will be submitted at the annual meeting.

This method of handling committee work is speeding up results and is reducing the number of sessions necessary during the annual meeting. By selecting cities for the midyear meeting at places centrally located with regard to the residence of the members of the three divisions a larger attendance can be had.

As a result of this new system many members were at Dallas only long enough to attend their special committee meeting, or having no committee meeting to attend came on for the technical sessions, at which special papers in which they were interested were presented and stayed only long enough to hear the discussion.

It is reported that 435 members registered during the week, although some of the meetings were attended by between 500 and 600 persons.

Current Production Situation

The afternoon session on Wednesday was well attended. Robert R. Penn of the Penn Oil Co., Dallas, and director in the institute, presided and made the address of welcome preceding his prepared paper on "A Major Surgical Operation."

Gov. R. S. Sterling could not attend to give the address for which he was scheduled. Charles F. Roeser of Fort Worth, Tex., opened the discussion by outlining conditions in the East Texas area and pointing out some of the many difficulties being encountered there and elsewhere because of the discovery of this field. Mr. Roeser gave statistics covering the number of wells completed, their production, the allowable production, the overproduction and the number of new wells being drilled. It is estimated this field can easily produce 3,500,000 bbls. per day if all wells were produced without restriction.

There are 46 pipe lines serving the three producing areas in East Texas, eight connecting with major trunk pipe lines giving outlet to the Gulf Coast and the eastern seaboard and the Great Lakes. Many of the lines are from 8 to 12 miles in length and connect with loading racks, of which there are 38 along the railway rights of way having a total capacity of about 1,644 cars daily.

The total producing area has been estimated at from 95,000 to 120,000 acres, with over 600 wells completed and another 600 or more drilling. If the average acreage per well is only 10 acres this area will require over 10,000 wells before it is completely drilled up, and to date no well has been reported a failure within the now defined limits of production.

To the east the margin of the pool is well marked, and the western edge is being rapidly outlined, and between the now known eastern and western limits the field will vary from 3 to 7½ miles in width, being widest across the north end, or the Longview district, much narrower in the center or Kilgore Field, and widening again at the south pool or the Joiner area.

Full Co-operation Necessary

Mr. Roeser stated that in his opinion it was going to be necessary for everyone interested in the petroleum industry, whether in a large or small way, to cooperate in holding the production of this area within the limits of the demand for petroleum products. Some large companies without holdings in this area are buying oil at below the posted prices because they feel they must protect themselves against others who have contracted for cheap oil.

Small buyers and local refineries are taking advantage of the distress condition of many of the small producers who have broken into the industry for the first time in this area and this has had its tendency to break the price structure, but all must co-operate in reducing the amount of oil taken from the ground if it is to bring a profit to anyone.

Many of the independent producers were willing to sell their oil at from 25 to 30 cents per barrel at the well, and Mr. Roeser stated this oil cannot be produced at this price if lifting costs are taken into consideration. Many wells and areas within this pool now give evidence of an early decline of natural flow and will have to be put on the air lift or pump quickly, and under such conditions the producing costs will mount rapidly and if oil has been contracted at the above prices the well owner cannot deliver it without a serious financial loss.

Many of the larger buyers have recognized this possibility all along and have not seriously expected to be able to have delivered the full number of barrels of oil specified in contracts made below the market prices, feeling that any oil secured at low price would be that much advantage in protecting their purchases and averaging prices. If the small well owner could not deliver the oil for any reason it would be useless to try to force him by court action.

Inadequate laws are blamed for the present chaotic condition in East Texas for the Railroad Commission has been enjoined from enforcing its rules by decisions handed down by district court judges and Mr. Roeser seems to think it is a matter to be corrected by proper laws enacted promptly by the State of Texas legislature as Congress has shown no disposition to assist the oil man during this period of overproduction which

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New Methods of Securing Potentials

Dallas A.P.I. Meeting Devoted Time to Considering Improvements in Many Production Methods

By L. G. E. Bignell
Petroleum Engineering Editor

DALLAS, Tex., June 6.—Production and drilling practices and the methods of determining production allowances in prorated fields, together with the report of standing committee activities, formed the basis for the several technical sessions held during the midyear meeting of the division of production of the American Petroleum Institute in Dallas, Tex., June 3 and 4.

The opening session on Wednesday morning was presided over by W. W. Scott of the Humble Oil & Refining Co., Houston, Tex.

R. R. Penn, director of the institute, outlined the seriousness of the present situation but holding forth hopes of progress in correcting many of the evils now existing within the industry. Past knowledge gained by experience in the production and refining of petroleum, he said, should be put to definite use by the enactment of necessary laws based upon good practices and old laws based upon old methods should be abolished. The law copies rather than initiates innovations, Mr. Penn stated, and for this reason it is necessary to have changes made from time to time to keep the laws in step with new knowledge gained by advanced technical practices and the old theories that are reflected in the old laws should no longer be considered as adequate for present industrial conditions.

Papers on power transmission efficiency and efficiency in operating pumping rigs were presented by Charles L. Shirley, Tulsa, and W. C. Shutts and M. Bowman Thomas of Houston, respectively. Discussions followed and many valuable points were brought out regarding modern pumping practice.

In discussing the paper presented by Mr. Shutts on operation of pumping rigs, A. L. Faber, power engineer of the Arkansas Light & Power Co., Pine Bluff, Ark., stated that tests run under his supervision in the Smackover Field, Arkansas, have demonstrated the need of maintaining a common base line level for the bottom of the samson post and the base of the pumping unit if the power consumption is to be the same for pumping with a forward or backward motion of the crank.

Mr. Faber stated he had observed results upon some 20 rigs where installations had been made as above recommended and with the crank set back to give the required right angle between a line drawn from center of samson post bearing and bearing for pitman on walking beam and the pitman, which have shown a reduction in peak loads of as much as 25 per cent below that secured when the crank position was moved forward.

These installations have varied in size from 10 horsepower Lufkin gear-driven units to 35-75 horsepower General Electric-O. S. C. outfits. He has also observed results on gas engine driven units with this kind of a set-up and there power consumption has also been reduced an appreciable amount.

If the base of the pumping outfit is raised or lowered above a line passing through the bottom of the samson post it tends to lengthen or shorten the pitman to such an extent that the rig cannot be operated as efficiently as it would if the pumping unit is placed upon a common level with the samson post.

High Volumetric Efficiency

Hallan N. Marsh, with the General Petroleum Corp., Los Angeles, presented a paper on "High Volumetric Efficiency in Oil Well Pumping and Its Practical Results," which was one of the outstanding papers of all sessions.

Mr. Marsh prepared an outline of his paper, in which he was assisted by B. H. Robinson and D. H. Kingman, also with the General Petroleum Corp., and during his presentation this typewritten form was always on the screen, except when he was making direct reference to some chart or graph used to illustrate some detail. This method of presentation is an excellent one, as the audience was able at all times to keep pace with his delivery and follow each detail of his discussion clearly. Being prepared in a logical sequence of subjects, the paper was readily understood by layman and engineer alike and it is hoped that other authors of papers will follow Mr. Marsh's lead in the manner of presentation of future papers before technical societies or gatherings of a like nature.

The paper dealt with the apparent and actual volumetric efficiency and various methods of determining it, as well as conditions and advantages of securing this higher volumetric efficiency and is recommended to all students of production practices as a well-finished piece of work worthy of careful reading and study.

Proration Potentials

The session on Wednesday night was presided over by H. H. Hill, Standard Oil Development Co., New York City.

Robert E. Allen, assistant umpire for the State of California, Los Angeles, Calif., presented the first paper, "The Proration of Production Within the Field."

The second paper was "A Method of Determining Production Allowance in Prorated Fields," prepared by H. D. Wilde, Jr., and T. V. Moore, Humble Oil & Refining Co., Houston, Tex., and printed in The Oil and Gas Journal of June 4.

Much discussion followed the presentation of these two papers but in the main the findings of the authors were agreed upon as correct. All concurred in the statement that better methods of obtaining potentials of wells in prorated fields were essentially necessary and the recommendations made in these papers will aid considerably in establishing some uniform methods applicable to all types and kinds of producing areas.

Corrosion Session

Carl R. Weidner, Prairie Pipe Line Co., Independence, Kans., presided over

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Mid-Continent Runs Up 57,000 Barrels

East Texas Plants and Better Demand for Gasoline Account for Higher Schedule. Operations Still Below 1930

By W. T. Ziegenhain

Mid-Continent refiners will run approximately 57,000 bbls. more crude daily during June than the previous month, the increased activities being reflected in all areas but more particularly in East Texas, where three new refineries have started operating. However, this month's schedule is again below that of a year ago and is substantially below the schedule of two years ago. These facts emphasize the willingness on the part of the Mid-Continent refiners to balance their operations with demands and the June increase is expected to be absorbed by the better seasonal demand for gasoline.

RUNS TO STILLS AT MID-CONTINENT REFINERIES

1929	
May 1	577,500
June 1	583,030
July 1	565,800
August 1	555,250
September 1	552,300
October 1	544,720
November 1	545,473
December 1	540,630
1930	
January 1	535,460
February 1	519,355
March 1	531,500
April 1	555,250
May 1	574,300
June 1	572,250
July 1	548,475
August 1	526,400
September 1	498,710
October 1	518,800
November 1	506,700
December 1	478,360
1931	
January 1	478,795
February 1	470,125
March 1	449,634
April 1	497,391
May 1	510,640
June 1	567,915

North Central Texas showed the largest increase in the crude runs among the six Mid-Continent refining areas. This is due to starting up the new Taylor Refining Co. plant at Tyler, the Overton Refining Co. plant at Overton and the Independent Oil Refining Co. plant at Arp. The Taylor refinery will run approximately 10,000 bbls. of crude daily but may increase this to 15,000 bbls., the capacity of the plant, before the close of the month. The Overton plant has a capacity of 3,500 bbls. but a schedule of 2,500 bbls. daily has been established for June. The Independent plant will begin running 150 bbls. per day and will increase the schedule as sales permit. The plant has a capacity of 500 bbls. daily.

In addition to these three East Texas plants, operations were resumed in the Thurber Refining Co. at Thurber and in the Iowa Park Producing & Refining Co. at Iowa Park, bringing the total to six plants to be added to the list of operating refineries in the North Central Texas area for June.

Low Crude Prices

Refinery operations have been increased in most plants as a result of the increasing demand for gasoline which in turn is purely seasonal. In a few plants, particularly those in the East Texas area and those receiving East Texas oil by pipe lines and tank cars at a total delivered cost below the general posting, the runs have been increased simply to take advantage of the chaotic conditions in the East Texas crude market. Oil is said to be going out of the East Texas area as low as 12 cents a barrel and buyers have been offered as much as 1,000,000 bbls. of this crude at 17½ cents a barrel in tank cars but have turned down the offers pending a more definite trend in the control to be placed on production there.

MID-CONTINENT REFINERY OPERATIONS

Districts—	June 1 No. of plants	June 1 Daily crude cap. (bbls.)	June 1 Daily crack cap. (bbls.)	June 1 Plants oper.	June 1 Runs to stills (bbls.)	May 1 Plants oper.	May 1 Runs to stills (bbls.)	Daily Inc. June 1
Arkansas	9	47,800	21,250	9	26,950	9	26,950	.....
Kansas	15	150,000	88,200	15	95,000	15	87,900	7,100
North Louisiana	7	54,300	18,000	5	28,025	5	27,825	200
Oklahoma	53	334,300	119,150	42	203,200	41	186,900	16,300
North and Central Texas	51	240,050	63,500	45	148,440	42	119,365	29,075
West Texas	29	147,500	53,350	21	66,300	21	61,700	4,600
Total	164	974,050	363,450	137	567,915	133	510,640	57,275

COMPARISON OF REFINERY MARGINS WHEN RUNNING EAST TEXAS AND SEMINOLE CRUDES

SKIMMING OPERATION

Typical refinery operating revenue-per-barrel statement when skimming East Texas crude and selling all products at today's tank car spot price in the Mid-Continent. (Based on skimming 5,000 bbls. daily in a modern plant):

Products—	Market price		Revenue per bbl. crude run
37% Gasoline (415 endpoint)	$ .02½	gal.	$ .39
6% Kerosene (41-43 gravity)	.02¼	gal.	.06
24% Gas oil (29-30 gravity, 60 cold test)	.30	bbl.	.07
30% Fuel oil (19 gravity, 110 cold test)	.20	bbl.	.06
Gross revenue per barrel of crude run			$ .58
Cost of crude in field (38 gravity)	$ .35		
Bare processing cost	.10		
Bare manufacturing cost			.45
Margin left to pay for gathering and transporting the crude, depreciation, interest, sales expense and all other refinery costs			$ .13

Typical refinery operating revenue-per-barrel statement when skimming Seminole, Okla., crude and selling all products at today's tank car spot prices in the Mid-Continent. (Based on skimming 5,000 bbls. per day in modern plant):

Products—	Market price		Revenue per bbl. crude run
39% Gasoline (415 endpoint)	$ .02½	gal.	$ .41
6% Kerosene (41-43 gravity)	.02¼	gal.	.06
24% Gas oil (29-30 gravity)	.35	bbl.	.08
29% Fuel oil (19 gravity, 40 cold test)	.25	bbl.	.07
3% Loss	..		..
Gross revenue per barrel of crude run			$ .62
Cost of crude in field (39 gravity)	$ .36		
Bare processing cost	.10		
Bare manufacturing cost			.46
Margin left to pay for gathering and transporting the crude, depreciation, taxes, interest, sales expense and all other refinery costs			$ .16

CRACKING OPERATION

Typical refinery operating revenue per barrel statement when skimming and cracking East Texas and selling all products at today's tank car spot prices in the Mid-Continent. (Processing to coke 5,000 bbls. daily in modern plant):

Products—	Market price		Revenue per bbl. crude run
70% Gasoline (415 endpoint)	$ .02½	gal.	$ .74
5% Kerosene (41-43 gravity)	.02¼	gal.	.05
3% Distillate (170 flash)	.01¾	gal.	.02
12% Coke	2.00	ton	.04
10% Loss and permanent gas	..		..
Gross revenue per barrel of crude run			$ .85
Cost of crude in field (38 gravity)	$ .35		
Bare processing cost	.31		
Bare manufacturing cost			.66
Margin left to pay for gathering and transporting the crude, depreciation, taxes, interest, sales expense and all other refinery costs			$ .19

Typical refinery operating revenue-per-barrel statement when skimming and cracking Seminole crude and selling all products at today's tank car spot prices in the Mid-Continent. (Processing to coke 5,000 bbls. daily in modern plant):

Products—	Market price		Revenue per bbl. crude run
72% Gasoline (415 endpoint)	$ .02½	gal.	$ .76
5% Kerosene (41-43 gravity)	.02¼	gal.	.05
3% Distillate (170 flash)	.01¾	gal.	.02
11% Coke	2.00	ton	.03
9% Loss and permanent gas	..		..
Gross revenue per barrel of crude run			$ .86
Cost of crude in field (39 gravity)	$ .36		
Bare processing cost	.31		
Bare manufacturing cost			.67
Margin left to pay for gathering and transporting the crude, depreciation, taxes, interest, sales expense and all other refining costs			$ .19

Several of the larger refiners have withdrawn from the market in East Texas, preferring to run their own oil since the general posting of the reduction in prices on Oklahoma and other Texas crudes. The lower Mid-Continent price schedule places all Mid-Continent oils on a competitive basis with the low-priced East Texas crude.

The larger refiners first attempted to accomplish this same end by posting the same price on East Texas crude as that prevailing in the other Mid-Continent fields but price cutting among producers in the new field became the rule rather than the exception.

Compare Crudes

The equality in the refining value of a typical Mid-Continent crude, namely Seminole, and East Texas crude is reflected in the operating revenue statements included here. In the one case a skimming operation has been considered and in the other case a skimming and cracking operation. When skimming Seminole crude the refiner is shown to have a manufacturing margin of 16 cents a barrel with which to pay the pipe line charge, depreciation on his equipment, taxes, interest, sales and all other charges other than his bare operating expense which is considered in arriving at the manufacturing margin shown. A manufacturing margin of 13 cents a barrel is shown when skimming East Texas crude. The difference is so small it could be ignored because of the errors introduced in the many assumptions made necessary in setting up such a comparison. However, the posted price for the crude was used in both cases and if East Texas oil continues to be offered below the general market and may be delivered to the refinery at the same cost as Seminole, East Texas oil will have a proportional advantage.

In a similar manner, the revenue from a cracking operation in the case of running East Texas oil is practically the same as when running Seminole crude, the manufacturing margin being shown here as 19 cents per barrel in each case.

These facts simply reflect the basic similarity in the two crudes and because nothing detrimental to East Texas crude has been found in it from a refining standpoint, the price at which it is offered bears a direct relationship to its acceptability.

Oklahoma Operations

Oklahoma also showed a substantial increase in its operations for June. The schedule of 203,200 bbls., as the total for all plants, is 16,300 bbls. higher than a month ago and represents a general increase in the runs in the greater number of plants rather than any large increase in a few of them. One plant shut down during June and the operations of two plants, which were idle in May, will be resumed during the month. The plant to be shut down is the Century Petroleum Corp.'s refinery in West Tulsa. This company's plant in Oklahoma City will resume operations and the schedule of runs has been set at 1,500 bbls. daily. The other plant to resume operations is the White Oak Corp. at Allen which will run 3,000 bbls. daily during the month. Another plant is expected to start up some time during June, namely the York Refining Co. at Oklahoma City, formerly the Electrol Refining Co. Operating tests are being made of all parts of the equipment and a regular schedule will be started as early as possible. The average runs for the month is expected to approximate 700 bbls. daily.

North Central Texas

In addition to the increased activities in the East Texas area mentioned previously, there were several important revi-

(Continued on Page 126)

Large Gas System Is Nearly Completed

Unusual Difficulties and Handicaps Encountered by United Gas Co. in Laying Lines Through Southern Louisiana Territory

By Neil Williams

HOUSTON, Tex., June 8.—With the exception of a few short gaps, mainly several bayou crossings where flood and weather conditions have prevented work so far, United Pipe Line Corp., a unit of the United Gas System, has completed its new southwestern Louisiana gas transportation and distribution system. Before June 15 gas will be turned into the lines as far as Lake Charles and within a short time thereafter the remaining gaps will be filled in and the entire system put in operation.

This represents one of the largest single gas transportation projects undertaken in the Southwest in several years and takes natural gas to a territory never before reached by this fuel except in a few local and isolated districts. It involved the laying of 446 miles of pipe ranging from 14-inch down to 2-inch, linking virtually all the more important towns and communities in that part of the State, a total of more than 45 of these. The main trunk line extends from a point near Kirbyville, East Texas, on the Northeast Texas-Beaumont 18-inch line of the Magnolia Gas Co. (now owned by the United Gas System), to Franklin, St. Mary Parish, Louisiana, a distance of 158 miles.

Construction of this project was started late last December and was to have been completed in March but obstacles which had to be met proved more difficult than had been expected, and these, coupled with unfavorable weather conditions part of the time and other circumstances, slowed up work very materially. In addition some last-minute changes in routing and plans had to be made at places.

Cutting through a slough with a steam driven excavator.

Construction Work

In putting in the system, work was carried on simultaneously at numerous points on the project. The eastern half of the project was laid by the Sexton Corp. of Texas and the western part by F. C. Youmans Construction Co., both of Houston. The entire project was handled by the Texas Construction Co., the engineering unit of the United Gas system, which company also put in directly the tap lines, these not being included in the contracted work. S. S. Nichols, general superintendent of the Texas Construction Co., and his assistant, V. E. Hamilton, Jr., were directly in charge of the work.

Except for several Dresser couplings per mile on some sections, the system is welded throughout, the greater part being done electrically. All pipe above the 6-inch is in 30-foot joints with belled ends which were welded with inserted chill rings. The smaller pipe was butt welded with chill rings. No compressor stations have been provided as yet but plans call for the installation of one at the head of the system where it ties into the Magnolia Gas Co. line near Kirbyville.

The project was put through under some of the greatest hardships and handicaps ever faced in pipe line construction, traversing quicksands, long stretches of bottomless swamps and bogs, and sloughs where tangled masses of timber had to be chewed through inch by inch. Nearly every type of power and method of pipe line laying had to be called into play to overcome the obstacles. Even modern machinery proved helpless on many stretches and hand labor had to be resorted to. Parts of the country were all but impassable.

Narrow gauge tracks used for moving pipe and equipment.

Hardships and Handicaps

In going through the swamps, miring down of equipment and animals was a frequent occurrence. Steam and gasoline driven ditchers with crawlers were used but these proved of little good along some of the line where the mulky soil conditions were heavy. Through some of the swamps, even ditching machines and tractors with heavy 48"x10"x3" plank extensions bolted to the crawlers became mired.

On low, swampy, water-covered stretches ditching was made possible only by steam dredges, which were followed up by small gasoline motor driven pumps mounted on pontoons which pumped the water and muck from the ditches made by the dredges. The use of pumps was frequently made necessary through rice field districts. In these districts coffer dams were built up above the water level where the pipe was to be laid and the water pumped out before ditchers and pipe layers could work.

Through one-half mile swamp section, dynamite was used. After clearing the timber, dynamite charges, usually four sticks to a hole, were placed at intervals of about 18 inches and fired in rapid succession, blasting a trench into which the pipe could be strung.

One of the chief obstacles faced by the ditchers was the rapid caving following the ditching machines, which resulted in a large amount of duplicated effort. The mulky soil did not form good retaining walls for the ditches and frequently even without the weight of machines would cave in. Crews of men with shovels had to follow the ditchers in these instances and by hand clear out the ditches. In places the ditchers did not even attempt to work but left the work up to the hand crews. In the worst portions wooden retaining walls or cribbing had to be built to prevent caving.

Stringing 14-inch pipe on sleds pulled by bull teams.

Hard to Lay the Pipe

Stringing and laying of pipe under these conditions also constituted a difficult task. Along some of the drier portions of the right of way, narrow gauge tracks were laid on cut timber for ties. This served for movement of pipe and transportation of equipment and men there but through swamp and marsh districts the pipe was dragged in on rollers and skids drawn by multiple mule or bull teams. The latter also would become mired frequently.

Through right of way entirely covered with water, the pipe had to be floated in. The long string of pipe would be completely welded on the higher ground at the edge of the marsh, and then, with stream end plugged, it would be dragged across with winch lines on anchored tractors as fast as additional joints of pipe could be welded on the line. Backfilling was not necessary on such strips as the pipe was allowed to find its own bottom and because of the watery condition of the ground the ditch soon filled in naturally.

Welding on swamp and marsh sections was done by portable units mounted on skids where the ground permitted and on pontoons across the worse strips. The generator and welding units themselves were on small, light wagons, which could be rolled onto the skids or pontoons and fastened easily when conditions necessitated.

All coating and wrapping of pipe was done on the job and this in itself was no small problem, considering the swamp conditions. The wrapping was accomplished by a W.K.M. hand-operated pipe wrapping machine which was run along the line as it was ready to be snaked into position in the ditch. A special pipe-cleaning machine preceded the wrapping machine which was followed immediately by coaters. For lifting the pipe off the ground so that it could be coated and wrapped a traveling elevator device hung from a side boom on a caterpillar tractor was used. This elevator, on which the pipe was suspended, was run along the line with the cleaning and wrapping machines, lifting the pipe a sufficient distance above the ground to facilitate work.

Floating welded line across low stretch of right of way.

Crossing Drainage Canals

One of the hardest problems on the system was the crossing of the numerous drainage canals. Contracts provided that the pipe should be laid in tunnels under these canals instead of being laid across them as in river crossings. To dig a sufficient level below these ditches to prevent breaking through constituted a considerable hazard. This necessitated the excavation of trenches sometimes as much as 15 feet deep on either side of the canals so that workers could get low enough to bore under them. All such trenches had to be thoroughly cribbed while being dug so as to prevent caving. In going under the ditches, the tunnels had to be permanently cased. Tunnels also were dug under all levees and these also were cased.

While the work encountered numerous handicaps along much of the right of way, only two important river crossings had to be made, these being the Sabine and the Calcasieu. The multiple type of crossing was made. A little different practice was followed in providing a bottom for the pipe below the bed of the river than usually is done. That is, a channel was scooped out instead of being dredged. A large dragline bucket swung from a cable stretched across the river was used and by steam power this was

(Continued on Page 91)

Market for Specialties Expanding

Research Department of Indiana Standard Constantly Developing New Products for Use by a Large Number of Industries

By Robert C. Conine

Major companies have spent millions of dollars to equip their plants with facilities for taking advantage of the treasures their research and development laboratories have found in petroleum. One major interest which has probably done most to extend the utilization of petroleum is Standard Oil Co. of Indiana, and the activities of this company in this field will be discussed near the close of this article. Here, it is proposed to point out some of the primary and secondary products of crude oil under their general heads:

Light distillates: Motor fuel, solvents, explosives, heating fuel, turpentine substitutes, special acids and other chemicals, flotation oils, lamp oils. Heavy distillate (fuel): Gas oil and smudge oil; (cracking oils) artificial gas, motor fuel, medicinals, spray oils, absorbent oils, synthetic gasolines, explosives, dye intermediates. Fuel oil: Road oil, spray oil, coke, fuel distillates and artificial gas which in turn adds, naphthalene, aromatic hydrocarbons, dye intermediates, carbon black and explosives.

FINDING NEW USES FOR PETROLEUM

Research departments both within and outside the oil industry are constantly perfecting products for new uses. Major refining organizations are especially active and have been rewarded with profitable outlets for the so-called "specialties." Those in touch with these developments believe that this field is still in its infancy and the next few years will witness a rapid expansion.

In this phase of company activity the sales department plays an important part. Work of the research and development departments is wasted unless profitable outlets can be found by specially trained sales staffs.

In the accompanying article, the writer discusses the general phases of the specialty field and outlines the work of the Standard Oil Co. of Indiana which for several years has been a leader in developing new markets for petroleum.

Lubricating oils: (Liquid) medicinal oils, compounded oils, gear oils, wool oils, steam cylinder oils, motor oils, spindle oils, absorbent oils, technical oils, soluble oils, spray oils, thread cutting oils, tempering oils, quenching oils, pottery and form oils, solvents, insulating oils, conducting oils, stainless oils, soap oils, putty oils, denaturing oils, air filter oils, furniture and automobile polish ingredients, floor oils, sweeping compound oils, sizing oils, harness oils, cleaning oils; (greases) fiber greases, cup greases, gear greases, graphite greases, axle and skid greases; (paraffin wax) medicinal and dental wax, waterproofing for cartridges, canvass, paper, cardboard, and for wood block impregnation. Wax is also used for cable insulation and in preparing paper used in certain types of electrical condensers and transformers, in making candles and in ink composition. Petrolatum is used for compounding salves, hair pomades, antirust lubricants. It is used to protect metals subject to corrosive vapors. Other uses are, for printer's ink, shoe and metal polishes, buffing compounds, leather stuffing, steel cable and vegetable fiber rope lubrication, soap compounding and as a compounding agent in the manufacture of rubber goods.

Asphalt: (Air-blown and steam-blown) paint ingredient, rubber substitute, paving and roofing asphalts. As it is planned

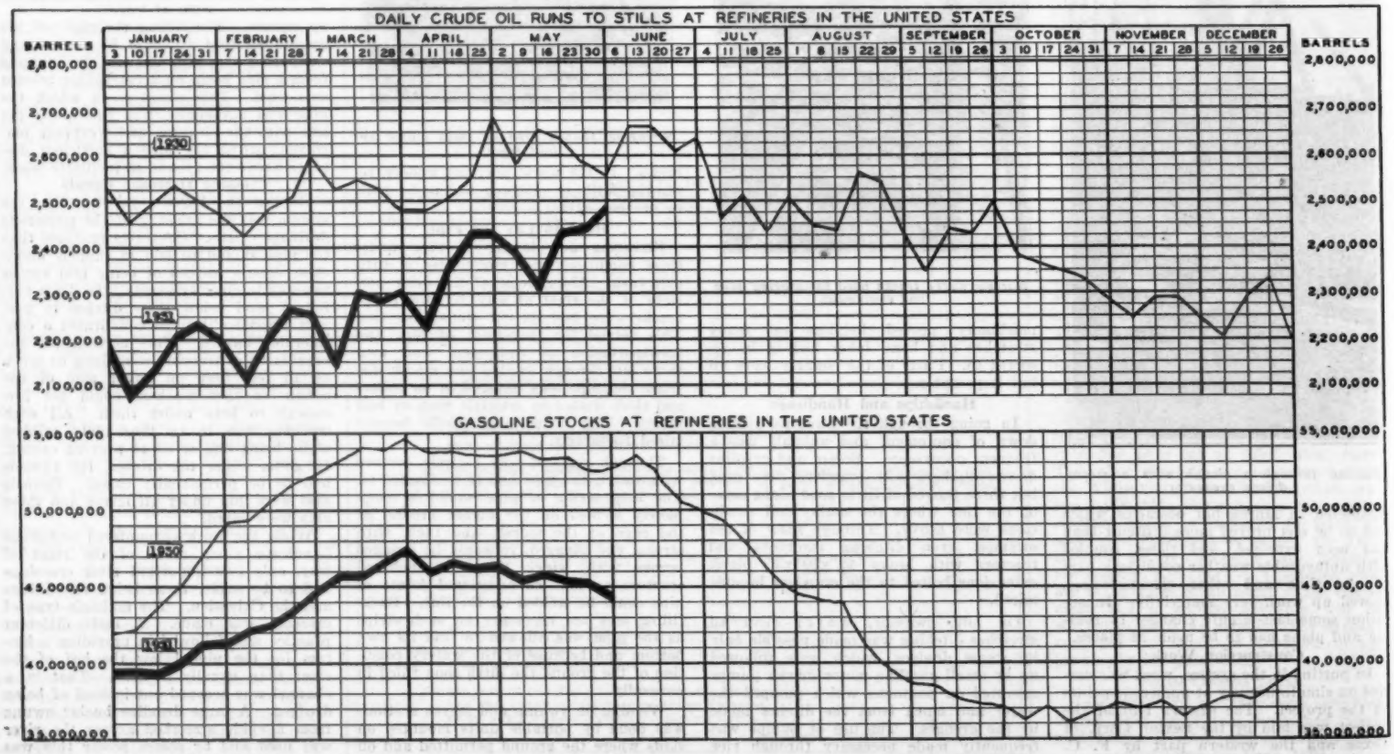
(Continued on Page 89)

AMERICAN PETROLEUM INSTITUTE WEEKLY REFINERY STATISTICS

The weekly report made to the American Petroleum Institute on refinery statistics—crude runs to still, gasoline stocks and gas and fuel oil stocks in barrels—for the week ending June 6.

	Week ending June 6, 1931				Week ending May 30				Week ending June 7, 1930			
	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
East Coast	100.0	494,100	8,156,000	9,291,000	100.0	496,700	8,267,000	8,738,000	100.0	541,600	9,069,000	8,302,000
Appalachian	91.3	93,100	1,626,000	1,202,000	93.3	96,600	1,600,000	1,140,000	91.0	81,600	1,785,000	820,000
Indiana, Illinois, Kentucky	96.6	338,000	6,327,000	3,776,000	97.5	324,700	6,386,000	3,784,000	99.6	327,000	8,347,000	3,964,000
Oklahoma, Kansas, Missouri	89.6	272,300	3,653,000	4,443,000	89.4	276,000	3,645,000	4,264,000	89.8	293,100	4,803,000	4,656,000
Texas	91.3	531,200	7,848,000	9,718,000	91.9	575,400	7,840,000	9,880,000	90.8	582,600	7,631,000	10,440,000
Louisiana and Arkansas	98.9	159,100	2,084,000	2,472,000	98.3	176,200	2,383,000	2,427,000	96.8	165,800	2,470,000	2,083,000
Rocky Mountain	89.3	53,900	1,924,000	845,000	93.1	48,100	1,905,000	843,000	93.6	58,300	2,772,000	1,142,000
California	96.5	476,700	12,607,000	98,758,000	98.8	480,900	12,769,000	98,387,000	99.3	621,500	16,380,000	106,982,000
Total United States	94.7	2,418,400	44,225,000	130,505,000	95.7	3,474,600	44,795,000	129,463,000	95.8	2,671,600	53,257,000	138,389,000
Texas Gulf Coast	99.8	414,300	6,656,000	6,922,000	100.0	438,400	6,642,000	6,977,000	100.0	442,500	6,451,000	7,517,000
Louisiana Gulf Coast	100.0	107,300	1,939,000	1,544,000	100.0	113,400	2,226,000	1,491,000	100.0	123,000	2,053,000	1,162,000

(1) Per cent refinery capacity represented. (2) Daily crude runs to stills. (3) Gasoline stocks. (4) Gas and fuel oil stocks.



Data for 1931 based on weekly reports of the American Petroleum Institute. Figures for last week not shown in graph but are included in above tables.

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JUST COMMON JUSTICE

This is a poor time to be adding to the troubles of the oil man, especially in Oklahoma.

Chairman Cornish of the State Tax Commission has come out with a declaration that when the State Senate amended the income tax bill by providing for the depletion allowance fixed by the Federal Government the substance was to practically exempt oil and gas companies from income taxation, and he therefore urges that the new law be amended by "either eliminating the arbitrary allowance or materially lowering the arbitrary allowance."

Members of a state tax commission are presumably chosen for their knowledge of taxation problems, but depletion is a term so much misunderstood that it is not surprising even the chairman should not realize what it means.

He seems to share the common notion that a deduction for depletion is some sort of gift, subsidy or special privilege that ought to be eliminated or pared down.

Actually, of course, it is nothing of the kind as a reference to the nearest dictionary for the meaning of depletion will show.

The term comes from two Latin words, meaning to empty out, which is precisely what depletion of an oil company's supply implies.

That oil which has been emptied out or disposed of has reduced or depleted by that much the supply acquired by the producer's investment. It cost him a proportionate part of that investment and represents so much of his capital, just the same as a merchant's stock on his shelves.

An income tax is a tax on income—on profit. The merchant's goods on his shelves do not represent income until they are sold at a profit and then only the gain is taxable as income.

So with the oil producer, his profit alone is taxable as income, not his oil, which is his capital. Therefore in levying an income tax on oil sold by a producer the levy must fall on the income or profit only and not upon the cost of the oil. Hence the provision that in levying income tax on oil production a deduction shall be made for the proportionate cost of the oil withdrawn and sold—or a deduction for depletion.

The oil producer, unlike the farmer, cannot grow another crop, and unless he can recover and retain his costs he will, upon exhaustion of his supply, find himself out of business through lack of means to continue drilling.

The common justice of this is so clear that there could be no controversy about it had not the misunderstanding about the word depletion distorted or perverted it into a sinister complication which is entirely without foundation.

Many of the world's fiercest controversies have arisen from misunderstanding of the meaning of words. Twisted by prejudice or misread in interpretation, words have been made to mean one thing to one side and exactly the opposite to another, whereas a clear and simple definition at the start would have been a basis for amicable adjustment.

Now that the befuddlement about the deduction for depletion threatens to plunge the industry into another controversy, The Oil and Gas Journal has asked an authority on tax legislation to present a clear and definite picture of what the term actually means, which appears elsewhere in this issue.

In arriving at the cost of oil production, aside from the laborious and costly appraisement of valuation properties which was tried by the Federal Government and abandoned for the present allowance of 27½ per cent, this provision was based upon exhaustive research and examination of the history of thousands of oil properties by representatives of the Government.

It took into account the extraordinary hazards of the oil producer, dry holes, unremunerative wells, cost of leases, cost of drilling, of exploration and geological work, legal and financial expenses, and struck an average which was considered representative for the industry at large. Anyone who has dealt with the income tax bureau will concede that any average thus fixed by the Government will not be a gift or subsidy or special privilege to the oil man.

The federal income tax department is even less likely than any state tax commission to be overlenient to the oil industry or to any industry. What has been deemed fair at Washington ought surely to be satisfactory at Oklahoma City.

Far from being arbitrary, as Chairman Cornish describes it, the federal provision for depletion allowance was fixed after a thorough and scientific—and, we may be sure, absolutely unsympathetic—investigation of the entire subject in all its details.

There was certainly no idea at Washington that the substance of it was to exempt oil and gas companies from income taxation, and the books of the companies will show it certainly did not.

More research was actually done on this subject by the Federal Government and the industry than the Oklahoma State Tax Commission will ever have time to make. The allowance represents beyond dispute the average cost of finding and locating oil in place, which is the producer's investment in the business upon which alone he can figure any profit for income taxation.

Without a deduction for depletion the oil producer would be paying in addition to his tax on his profits an income tax on his costs, as if the grocer, for example, were compelled to pay income tax on what he paid for his stock as well as on what gain he made when he sold it.

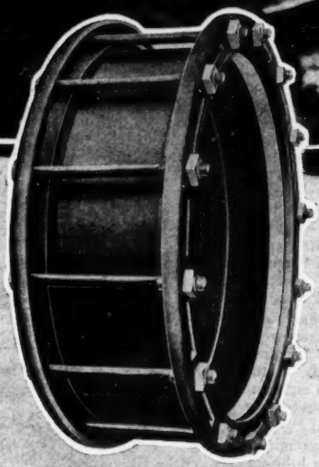
A tax on income means a tax on gain, not a tax on capital which would be a property tax and entirely different. The producer's oil represents his capital, the money he has put into his business. If, through the condition of the market, he sold his oil at cost or below cost, it surely could not be argued that he should pay income tax on the sale which netted him nothing or even caused him a loss.

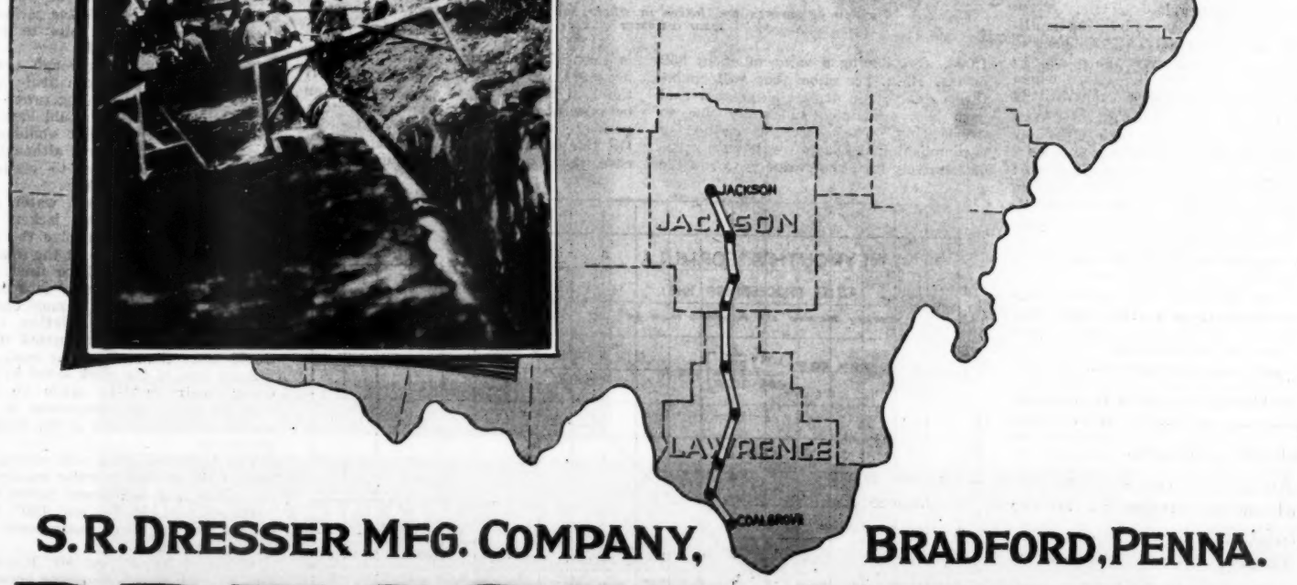
Yet that seems to be the idea behind the declaration that the allowance should be eliminated or materially lowered, so that if a producer sells oil he must pay an income tax on every dollar he gets for it, regardless of what it cost him to produce it.

Would the State Tax Commission dare to suggest that the farmers of Oklahoma must pay an income tax on every cent they receive for their products with no consideration of what they had paid for their farm, for seed, for labor and their other costs?

A little mature reflection on the actual meaning of the word depletion will, it may be hoped, lead the State Tax Commission to take a clearer view of the matter which has been the subject of much misunderstanding and a lot of distortion for political purposes.

Southern Ohio Hills offer No Barrier to the Flexible Dresser Coupled Line





S. R. DRESSER MFG. COMPANY, BRADFORD, PENNA.

DRESSER COUPLINGS DOMINATE

Factors in Operating Gasoline Plants

Advantages and Disadvantages of Single and Double Stage Compressors Discussed. Gives Interpretation of Indicator Cards

By N. C. Wells
The Texas Company*

The majority of oil-field compressors are driven by internal-combustion gas engines. This is due, of course, to the availability of cheap fuel. In many cases it is found desirable to use other types of power such as steam or electricity, both of which makes for easier and cleaner operation, as well as greater flexibility.

The theoretical cycle on which the internal combustion engine operates is known as the Otto cycle, that is, unless it be a Diesel engine operating on the Diesel cycle or one of its variations. There are two general types, the "two-cycle" and the "four-cycle" engines which should correctly be called "two-stroke cycle" and "four-stroke cycle," respectively.

"Scavenging" engines are those that employ a blast of cold air during part of the exhaust stroke. This serves to cool the walls and to remove the burnt gases from the clearance space and so to allow a cooler charge at the close of the intake stroke.

Types of Engines

The four-cycle engine has given rise to considerable disagreement of "indicated horsepower" as calculated from an indicator card. The upper area represents the positive work of the explosion stroke and the lower area the negative work of the scavenging stroke. It seems best to represent the indicated horsepower by the upper area. Then the difference between indicated and delivered horsepower would be the work lost in overcoming both fluid and mechanical friction.

Theoretically the "two-cycle" engine would develop twice the horsepower developed by the "four-cycle" engine of same dimensions and speed. Actually this is not true and the ratio is from 1.4 to 1.6 because of inherent losses due to design and operation.

The two-cycle engine is, as might be expected, inclined to use more lubricating oil than the four-cycle.

The principal reasons for using multi-cylinder units as well as double-acting cylinders are to conserve space and to give a more even turning effort which in turn allows the use of a comparatively small flywheel.

Two requirements for high efficiency of combustion are antagonistic and must be balanced in proper design. They are:

1. High final compression pressure and temperature give high theoretical efficiency and ready ignition and burning.
2. Low maximum temperature reduces loss of heat to the metallic walls and maintains low specific heat.

The use of excess air would utilize both of these effects to the fullest, but the resultant size of the cylinder would cause sacrifice in efficiency.

The limit of final compression is generally determined by preignition. However, even if this tendency could be overcome the maximum practical thermal efficiency of the Otto cycle would probably be reached with compression pressures of from 250 to 300 pounds per square inch.

In determining a heat balance for an internal combustion engine there are five outlets for heat:

1. Useful energy—15 to 30 per cent.
2. Heat to jacket water—25 to 50 per cent.
3. Heat carried out in exhaust gas—25 to 40 per cent.
4. Loss due to incomplete combustion—1 to 2 per cent.
5. Radiation and friction losses—10 to 20 per cent.

Conservative figures for fuel consumption of a natural gas engine run about 10 to 11 cubic feet per delivered brake horsepower. This is based on gas with a lower heating value than 1,000 B.t.u. per cubic foot and delivered horsepower thermal efficiency of from 23 to 25.5 per cent.

Most types of gas engines will operate better on gas of a heat value lower than 1,000. Gas having a value of about 850 or 900 B.t.u. per cubic foot will enable the engine to run at just as great a load with less mechanical difficulty due to overheating. One successful method of accomplishing the same result with a gas of relatively high heat value is to run the fuel line close to the exhaust line. This heats and expands the fuel so as to decrease its heat value per cubic foot.

Water Injection

The advisability of using water injection is a matter of conjecture. One beneficial effect that is always secured is that of slow burning, similar to the use of Ethyl compound in gasoline. If the load is such as to cause preignition because of high final compression temperature the effect might be a benefit. On the other hand, if such is not the case, the result might be an undesirable degree of cooling such as to preclude ready ignition and burning.

If water injection is employed, distilled water should be used and used sparingly. Excessive use of water will often cause emulsion of the lubricating oil.

Water injection in the exhausts is used solely for cooling. It is not necessary when the exhaust and muffler are cooled sufficiently by other means, nor is it necessary where careful attention in design supplies ample jacket water circulation in the vicinity of the exhaust ports.

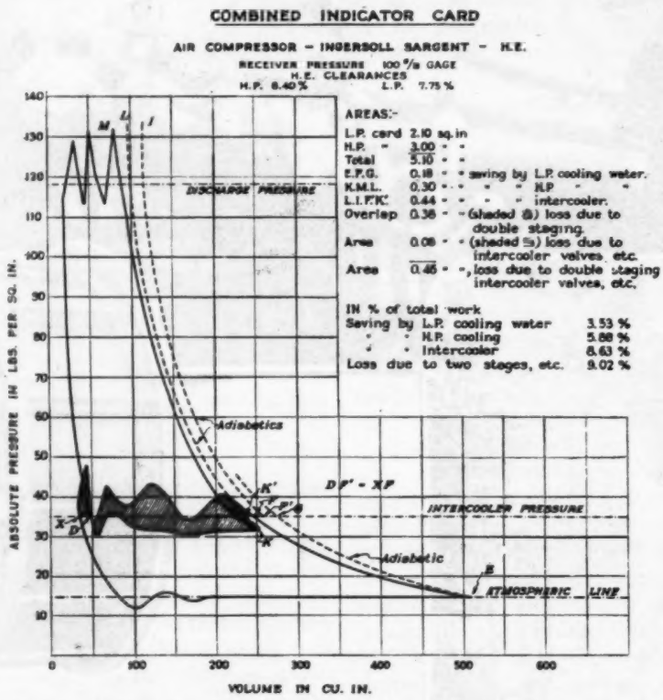

COMBINED INDICATOR CARD
AIR COMPRESSOR – INGERSOLL SARGENT – H.E.
RECEIVER PRESSURE 100 #/s GAGE
H.E. CLEARANCES
H.P. 8.40 %
L.P. 7.75 %
AREAS:-
L.P. card 2.10 sq.in
H.P. " 3.00 " "
Total 5.10 " "
E.F.G. 0.18 " " saving by L.P. cooling water.
K.M.L. 0.30 " " " " H.P. " "
L.I.F.K. 0.44 " " " " intercooler.
Overlap 0.38 " " (shaded ⊟) loss due to double staging.
Area 0.08 " " (shaded ⊟) loss due to intercooler valves etc.
Area 0.46 " ", loss due to double staging intercooler valves, etc.
IN % of total work
Saving by L.P. cooling water 3.53 %
" " H.P. cooling 5.88 %
" " intercooler 6.63 %
Loss due to two stages, etc. 9.02 %
DISCHARGE PRESSURE
Adiabatics
D'F' - XP
INTERCOOLER PRESSURE
Adiabatic
ATMOSPHERIC LINE
ABSOLUTE PRESSURE IN LBS. PER SQ. IN.
VOLUME IN CU. IN.

Figure 1—Division of savings and losses in single and 2-stage compressor determined from indicator cards.

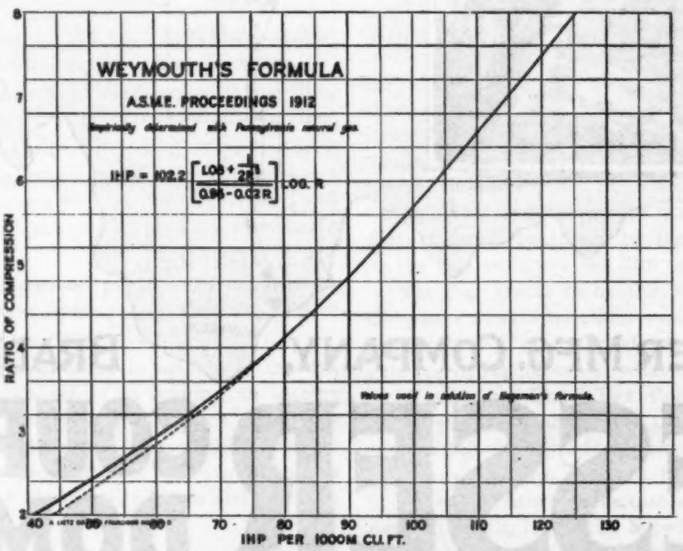

WEYMOUTH'S FORMULA
A.S.M.E. PROCEEDINGS 1912
Empirically determined with Pennsylvania natural gas
IHP = 102.2 [(LOG + 1/28) / (0.95 - 0.02R)] LOG. R
Values used in addition of Weymouth's formula.
RATIO OF COMPRESSION
IHP PER 1000M CU.FT.

Figure 2—Curve derived from Weymouth's formula showing relationship between ratio of compression and indicated power.

Water Injection

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Water injection in the exhausts is used solely for cooling. It is not necessary when the exhaust and muffler are cooled sufficiently by other means, nor is it necessary where careful attention in design supplies ample jacket water circulation in the vicinity of the exhaust ports.

Importance of Lubrication

Most cases of faulty operation and failure are directly due to faulty lubrication, which in turn might result from using a poor quality of oil, the wrong grade, too much or too little.

Crankcases do not require the quality of oil that the engine and compressor cylinders do, except of course where the crankcase oil is used in the cylinders. It is not good practice to economize on the quality of cylinder lubrication.

Water Cooling System

The upper and lower limits of the removal of heat by jacket water from the engine are more or less determined by the effects already discussed. Insufficient cooling, in addition to causing preignition, will often cause cracking of the cylinder due to stresses of high temperature. The engine jacket water should be kept below 120° F. The best temperature for engine operation are from 100° F. to 110° F. in, with a 10° rise in temperature of the water.

As for the compressor, the more heat of compression that can be removed in the jacket water, the greater will be the efficiency. There is a very definite and large saving to be effected in this cooling.

The ideal method of handling jacket water would be to use a closed system on the engine jackets and an open system on the compressor jackets. The engine jacket water would be pumped in a closed system through the jackets and then through cooling coils to cool it from 120° F. to 110° F.

The water pumped through the compressor jackets would constitute a part, or the whole, of the cooling tower water. In order to do this it would have to be treated water or one that would not deposit scale in the jackets, although scale deposits are less likely to occur here than in the engine jackets.

In this type of jacket water system the water to the engine jackets would not be so cold as to involve the chance of cracking a cylinder. At the same time the colder water could be used to advantage in the compressor jackets. Although it might appear to most operators to be an expensive installation, the advantages gained over a period of time would more than offset the cost.

Some idea of the work saved by jacket water cooling will be taken up in the example of an air compressor in which a total of 9.41 per cent of the total work was saved.

The following data will convey some idea of the minimum water requirements for engine and compressor jacket water:

Water in 110° F., out 120° F.—36 gallons per indicated compressor horsepower per hour.

Water in 70° F., out 80° F.—42 gallons per indicated compressor horsepower per hour.

These values may be interpolated for intermediate values involving a 10 degree rise.

Compressor Operation

To augment the saving by using jacket water, water injection is often used in compressor cylinders. The advisability of this practice is very questionable from

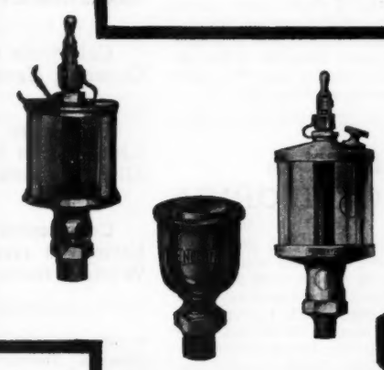
(Continued on Page 122)

*Part of paper delivered before the California Natural Gasoline Association May 14

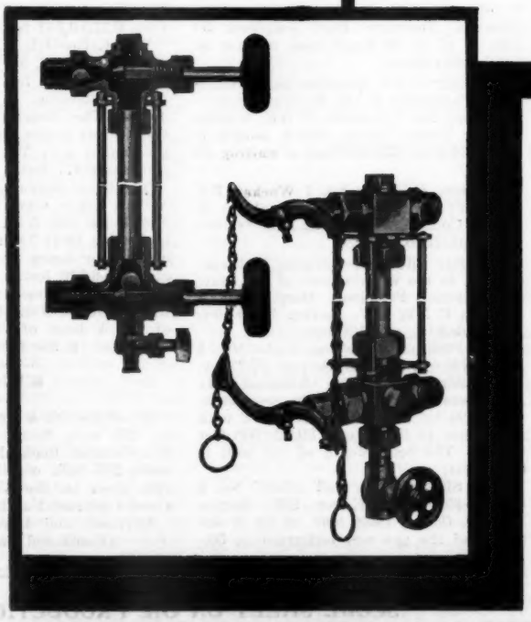
ALWAYS DEPENDABLE

PENBERTHY injectors, liquid level gages, and lubricating devices are universally used in field, refinery and natural gasoline plant because they have always been dependable under the most severe service conditions.

Penberthy Products are carried in stock by supply houses everywhere.



PENBERTHY PRODUCTS



PENBERTHY INJECTOR COMPANY

DETROIT

ESTABLISHED IN 1886

CANADIAN PLANT, WINDSOR, ONT.

CALIFORNIA OIL SURVEY COMMITTEE SUGGESTS AN ADVISORY BOARD

LOS ANGELES, Calif., June 6.—The California Oil Survey Committee, an unofficial group of business men not connected with the industry, has made its report through Chairman Mark L. Requa. The other members were: A. C. Balch, Los Angeles, formerly president of San Joaquin Light & Power Co., and Southern California Gas Co.; Roy N. Bishop, San Francisco, formerly president Sperry Flour Co.; Harry H. Fair, San Francisco, president, Peirce-Fair & Co.; and L. D. Ricketts, Pasadena, formerly president of Inspiration Consolidated Copper Co.

The committee's conclusions follow: Rigid curtailment, proration and balancing of production with consumption are prerequisite to stabilization. The committee feels that the industry, within itself, will remove the primary cause of its difficulties. A firm market at current posted prices should be assured for all crude produced under the curtailment program. The recent formation of the Oil Producers Sales Agency of California, a nonprofit corporation (an association of independent producers), is a step in the right direction.

Refining capacity is far in excess of any possible consumption of refined products. Further additions are without economic justification. Co-operation throughout the industry is fundamental. Independent refiners might well consider some form of co-operative organization.

Each company engaged in marketing petroleum products should exercise and adhere to the national "Code of Practices for Marketing Petroleum Products" of the American Petroleum Institute. Any willful and repeated infraction of the code by retail distributors should be followed by refusal to deliver refined products to the offender.

Each marketing company should abandon the practice of making special sales contracts in any form. Present special sales contracts should be immediately eliminated by adjustment on some equitable basis. If any contracts are necessary, each marketing company should establish a uniform form and insist on performance in accordance therewith.

Each marketing company should establish uniform and reasonable differentials. Excessive differentials have played a large part in demoralizing the industry through the opportunity thus afforded for price cutting. A firm control should be exercised over filling station prices if there is to be a stabilized price structure. Witnesses concurred that one of the major demoralizing factors was the exces-

(Continued on Page 125)

CRUDE OIL PRICES CUT DEEPLY IN FIELDS EAST OF CALIFORNIA

Beginning with the Stanolind Crude Oil Purchasing Co.'s reduction of crude oil prices in the Mid-Continent Field on June 1 there has been a general reduction of prices in all fields east of California and it is rumored in the Mid-Continent that California is destined for a readjustment some time this week. The Texas Company, Humble Oil & Refining Co. and Arkansas Fuel Oil Co. withdrew their posted prices in the East Texas Field and the Humble accompanied its withdrawal with the announcement that it would pay for oil at what it considered the average price being paid in that field.

For some time past the producers' associations in Pennsylvania have been warning producers in the Pennsylvania Grade fields to cut down their production as oil of that grade was being run to storage. Evidently the warning was disregarded as the South Penn Oil Co. reduced all Pennsylvania Grade oils 25 cents per barrel and the Tide Water Pipe Co., the dominant buyer in the Allegany-Bradford area in southern New York and northern Pennsylvania, made a corresponding cut. This resulted in $1.75 price in Allegany and Bradford; prices varying from $1.50 down to $1 for oil in the Venango-Butler Field, Southwest Pennsylvania Field, Southeastern Ohio and the West Virginia fields. Corning, Ohio, grade was cut to 65 cents and Ragland, Ky., oil to 60 cents. These prices were made effective on June 3.

On June 2 the Ohio Oil Co. reduced its posted price in Lima from 90 cents to 70 cents; Wooster, Ohio, from 99 cents to 73 cents; Illinois from 80 cents to 55 cents; Princeton from 80 cents to 55 cents; Indiana from 50 cents to 35 cents. Western Kentucky suffered a 25-cent cut to 50 cents.

On June 4 the Imperial Oil, Ltd., cut Oil Springs, Ontario, to $1.62, and Petrolia, Ontario, oil to $1.55, a 20-cent reduction.

All the purchasing companies that were not recorded last week as following the Stanolind Crude Oil Purchasing Co.'s new postings in Oklahoma, Kansas and North Central and East Central Texas followed quickly after the close of last week's report making the price slashing general in those areas. The Texas Company, effective June 2, cut prices in West Texas, Southwest Texas and the Panhandle, followed on June 3 by all the other buyers, with the result that Gray County was quoted below 35 gravity, 24 cents, with 1 cent added for each full degree upward to 40 and above at 30 cents; Carson and Hutchinson Counties, below 35 gravity, 21 cents, with 1 cent added for each degree upward to 40 and above at 27 cents; Winkler, Pecos, Crane, Upton, Crockett, Ector, Howard and Glasscock Counties, 25 cents per barrel, and Lea County, New Mexico, 25 cents per barrel; Mirando, 44 cents; Salt Flat, 37

(Continued on Page 128)

Late Fields

SOUTHWEST TEXAS

SAN ANTONIO, Tex., June 8.—Davis' No. 1 Ray, a mile west of southwest corner of Pettus Townsite Pool in Bee County, topped sand at 3,919 feet and cored to 3,925 feet with a well saturated core. Sand is running at regular depth and looks very probably an extension of pool.

Houston Oil Co.'s No. 23 Cartwright, in Cartwright gas field in Live Oak County, with 11 feet of sand at total depth of 3,565 feet on drill stem test, filled 250 feet 24 gravity oil in eight minutes. Sand is entirely new. One small well is producing at 1 mile depth and regular gas-producing sand is at 2,100 feet.

Barbee & Hunter's No. 1 Finnegan, in Kleberg County, cored 6 feet of sand total depth 2,260 feet, showing oil. It is shut down for orders. J. M. Davis' No. 1 Ray, at Pettus tested 4 fourbles of oil and no water on a drill stem test in 10 minutes. Ike Howeth's No. 1 Singer, in Brooks County, with sand at 1,458-63 feet, is showing oil and will make drill stem test.

OKLAHOMA

The potential production of the Konawa Pool, in Seminole County, Oklahoma, was given as 24,331 bbls. from a recent 24-hour gauge.

Blackwell Oil & Gas Co.'s No. 1 Holmes, SW cor. NE SW, Section 9-7-8, in the area west of Holdenville, in Hughes County, was shut in as a gas well making 25,000,000 feet of gas a day. The well also made 85 bbls. of oil in 12 hours.

Droppleman and others' No. 1 Lack, C SW SE NW, Section 30-8-8, in the Wewoka Townsite Pool, swabbed 30 bbls. of oil in 12 hours from the pay at 3,685-3,800 feet.

The only active operation in the Oklahoma Panhandle is the Western Production Co.'s No. 1 Gamble, C NE, Section 24-4-13, Texas County, which landed 1-inch casing at 621 feet and is waiting on cement.

Malernee Oil Co.'s No. 1 Wacker, NE cor. SW, Section 24-2-2w, a wildcat in Garvin County, was drilling at 3,900 feet with nothing showing.

The only wildcat test drilling in Blaine County, in the western part of the State is Washoma Petroleum Corp.'s No. 1 Phillips, C NW SW, Section 13-19-10w. It was drilling at 5,120 feet.

The Phillips Petroleum Co.'s No. 1 Hare, NE cor. SW SE, Section 34-12-3w, in the north end of the Oklahoma City Field, was completed and the production was 8,290 bbls. the first four hours, with a gas flow at the rate of 39,000,000 feet a day. The total depth of the well is 6,505 feet.

Tom Slick Oil Co. and others' No. 2 Classen-Edwards, SE cor. SW, Section 3-11-3w, flowed 1,638 bbls. of oil in one hour and the gas was estimated at 50,000,000 feet a day. The Wilcox sand was from 6,370-6,541 feet.

The Keene-Okla. Oil Co.'s No. 1 Ohio, SE cor. NW SE, Section 15-11-3w, which has been bailing for about 10 days, with nothing showing, is rigging up to drill deeper. The owners expect to drill the test 40 feet deeper before making another production test. The total depth of the test was 6,477 feet.

The Great Southern Petroleum Co. and Wilcox Oil & Gas Co.'s No. 1 Butcher, N half SE SW NW, of Lot 32, Block 2, in Section 10-11-3w, flowed 2,491 bbls. of oil in four hours from the Wilcox sand at 6,430-6,520 feet.

The production from the Oklahoma City Field on June 9 was 202,756 bbls. of oil. A total of 789 wells have been completed in the field.

KANSAS

Syndicate Oil & Gas Co.'s No. 1 Becker, SE cor., Section 36-19-2w, in the Ritz-Canton Pool, McPherson County, made 275 bbls. of oil in 12 hours after two shots in the Viola lime and was given a potential of 1,214 bbls. a day.

Reynolds and Unruh's No. 1 Koehn,

(Continued on Page 128)

High Spots in Field News

SOUTHWEST TEXAS

Test in Real County may be important. Interesting test in Balcones Fault zone in Guadalupe County.

KANSAS

Ritz-Canton area has a potential exceeding 100,000 bbls daily. Operators of State hold proration conference.

NORTH LOUISIANA-ARKANSAS

Only oil completions in Zwolle and Urbana districts with two gas wells in Richland Parish area Four dry holes.

OKLAHOMA

Oklahoma production increased temporarily, mostly from Oklahoma City Field. Big wells within city limits.

GULF COAST

Another good well at Barbers Hill. Orchard Dome area extended. Southern Victoria well blows wild and is killed.

ROCKY MOUNTAIN AREA

Third flow in Harding County, New Mexico, wildcat. Midwest blocks new area in northeastern Colorado. Show in Utah test.

CALIFORNIA

California operators confident of success of curtailment plans. Governor signs conservation bill. Gasoline shipments drop.

WEST TEXAS

Schleicher County most interesting area because of test with 3,500 feet in hole. Big Lake deep producer aided by deepening. Slight increase in potential for Crane-Upton district.

EAST TEXAS

Completions during week reach 108, with only one dry hole. Estimated recovery for entire district put at 2,000,000,000 bbls. Western limits being defined by water or refusing to flow.

SCORE SHEET ON OIL PRODUCTION

Below is shown the allotted average daily production in the United States from April 1 to October 1, 1931, suggested by the Oil States Advisory Committee, and the actual daily average production in the week ending June 6:

	Barrels			
	Allotted	Actual	Over	Under
Oklahoma	550,000	552,140	2,140	.....
Texas	714,000	967,490	253,490	.....
California	500,000	527,500	27,500	.....
Kansas	110,000	106,750	.....	3,250
Arkansas	50,000	45,705	.....	4,295
Louisiana	65,000	66,720	1,720	.....
New Mexico	40,000	43,268	3,268	.....
Rocky Mountain area	60,000	54,200	.....	5,800
Eastern fields	110,000	110,000	.....	.....
Total	2,199,000	2,473,773	288,118	13,345

Total net average daily overproduction, 274,773 bbls.

Oklahoma Production Up 24,000 Bbls.

Temporary Increase in Oklahoma City Field. Big Wells Continue to Come Within the City Limits

By W. A. Spinney
Staff Correspondent, Oklahoma Fields

The State's oil production increased during the seven days ending June 6, when the daily average was approximately 551,750 bbls., an increase of 24,000 bbls. compared to the previous seven days. The production is considerably over the allowable recommended by the Oklahoma Corporation Commission which placed the State at 550,000 bbls. a day.

The recent price cuts in the crude oil markets may result in stripper wells in scattered parts of the State, which are producing a barrel or less per day, being shut down. Wells that are only making a small quantity of oil and considerable water may be abandoned as it is no longer profitable to operate and pay pumping costs at the present crude prices, which are the lowest in history. The principal areas affected in the State are in the northeastern and southern parts of Oklahoma.

The increase in the State's production was mostly from the Oklahoma City Field which averaged approximately 174,900 bbls. a day, and totaled 1,222,956 bbls. for the seven days. The increase in the Oklahoma City Field's production was believed due to new wells being completed in the north part of the field, which was also extended a half mile west. The purchasing companies reduced shipments for the seven days ending June 6, when the total shipments were 913,435 bbls. compared to 941,792 bbls. the previous seven days.

The deepest drilling well in the State is nearing the 8,000-foot level and is still drilling with rotary tools. Mid-Kansas Oil & Gas Co. and Ramsey Petroleum Co.'s No. 6 Preston-Culp, NW cor. NE, Section 6-5-9w, on the west side of the Cement Pool, in Caddo County, was rotating at 7,815 feet in green shale. It is the deepest test ever drilled in the Cement Field and the owners expect to reach the Wilcox sand before completing the well.

The Magnolia Petroleum Co.'s No. 2 Estes, SE cor. SW NE, Section 10-5-9w, on the east side of the Cement Pool, in Caddo County, was drilling at 5,003 feet and it may also be drilled to the Wilcox sand formation.

Oklahoma City Field

On the extreme west edge of the Oklahoma City Field a well has been bailing for several days and it was found to be bridged after the bailer had been run to 5,293 feet. The test is the Keene-Okla Oil Co.'s No. 1 Ohio, NE cor. SE NW SE, Section 15-11-3w. It was drilled to a total depth of 6,447 feet in broken sand. The top of the sand was found at 6,365 feet.

During the week production in the Oklahoma City Field was extended a half mile west in the north end of the pool. The well brings production within a few blocks of the business district in the U-7 drilling zone, which was established by the city zoning commission. The well was Capitol Producing & Refining Co.'s No. 1 Refinery, NE cor. SE, Section 4-11-3w, flowed 314 bbls. of oil in 30 minutes, and 1,000 bbls. in two hours. It was estimated to be making 20,000,000 feet of gas a day. The well is located near the company's refinery on South Robinson Street and is on the edge of the wholesale district. It is the most westerly producing well in the Oklahoma City Field, and the nearest production is about a half mile east. The well proves considerable territory along the Canadian River bed and bottoms in the northwestern part of the field. The owners estimate the well at 7,000 to 9,000 bbls. a day from the Wilcox sand at 6,450-6,540 feet.

The same company was preparing to start operations at another test at the south offset on a six-acre tract known as No. 1 Hill, in approximately SE cor. NE SE, Section 4-11-3w.

The Stanolind Pipe Line Co. has increased its shipments from the Oklahoma City Field to an average of approximately 40,000 bbls. a day, after reducing them from 50,000 bbls. a day to approximately 27,000 bbls. a day. The company's recent nominations for the next three months were approximately 18,000 bbls. a day.

The potential gauges on 587 wells have been taken by Umpire Bradford in the Oklahoma City Field. The majority of the wells on the recent gauge were completed since the January gauges were taken. The last group of the wells on which potentials have been checked is as follows:

RECENT POTENTIALS

Company and well—	January	New
Anderson-Prichard Oil:		
No. 4 Gibbons	None	19,412
H. L. Blackstock et al:		
No. 3 Harvey	6,252	4,371
California Operating Co.:		
No. 1 Stout-Twy.	None	3,685
Century Petroleum:		
No. 1 Jefferson	None	5,058
Cromwell-Franklin et al:		
No. 18 Trosper Park	14,284	14,422
I. T. I. O.:		
No. 3 A. Bodine	None	2,452
No. 4 A. Bodine	None	2,491
No. 1 C. Brokaw	None	2,491
No. 2 C. Brokaw	3,430	3,641
No. 1 Capshaw	None	886
No. 2 L. Farley	None	503
No. 1 Ferguson	None	4,841
No. 3 Jennings	None	4,087
No. 1 Oklahoma City	None	503
Mid-Kansas O. & G.:		
No. 2 Browning	471	560
Phillips Petroleum:		
No. 1 Damewood	None	58,570
No. 1 Crean	None	25,475
No. 1 Hatcher	None	3,744
No. 1 Robb	None	11,371
No. 1 Winstead	None	19,014
Prairie Oil & Gas:		
No. 1 Hiddleston	270	972
T. B. Slick Interests:		
No. 1 Blevins	None	29,851
No. 1 Dennis	5,475	4,386
No. 1 Harrison	3,080	1,574
No. 1 Rodman	1,253	928
Wilcox Oil & Gas:		
No. 1 Short	None	12,105
Wirt Franklin Pet.:		
No. 1 Schillings	None	33,095

It was estimated by one company that the cost of lifting a barrel of crude oil in the lime area in the Oklahoma City Field is 34 cents. It is also estimated that the lifting charges in the Lower Simpson and Wilcox sand zones were approximately 15 cents a barrel. The top price for crude oil under the present market prices is 37 cents a barrel for 40 degrees and above.

Recent Completions

Wells completed during the week in the Oklahoma City Field were as follows: Westgate Oil Co.'s No. 1 Grace, NW cor. NE NW Section 10-11-3w, made 7,143 bbls. of oil in 4½ hours from the Wilcox sand at a total depth of 6,515 feet. The gas was estimated at 42,000,000 feet a day. Payne, Johnson and others' No. 1 Chapin-Levy, NW cor. SE NW NW Section 10-11-3w, flowed 3,171 bbls. of oil in 3 hours and 10 minutes with gas that was estimated at 43,000,000 feet a day from the Wilcox sand at a total depth of 6,540 feet. Tom Slick Oil Co.'s No. 4 Classen-Edwards, SE cor. SW Section 3-11-3w, made 3,004 bbls. of oil the first two hours, with 27,000,000 feet of gas a day, from a total depth of 6,485 feet. The Hudspeth Oil Co.'s No. 1 in the SE cor. NE NW Section 3-11-3w, flowed 7,280 bbls. of oil the first four hours, according to figures released from the field umpire's office. The oil was found in sand at 6,230-6,490 feet. Phillips Petroleum Co.'s No. 1 Doris, SW cor. NE NW Section 10-11-3w, flowed 1,435 bbls. of oil in one hour with an estimated flow of 25,000,000 feet of gas a day. The oil was found in the Wilcox sand at 6,361-6,496 feet. R. A. McArthur and others' No. 1 Kammerdeimer, SW cor. NW NW Section 3-11-3w, flowed 1,680 bbls. of oil the first hour, with an estimated 52,000,000 feet of gas a day from the Wilcox sand at a total depth of 6,500 feet. The Great Southern Petroleum Corp.'s No. 1 D. Boucher, SE cor. SW SW Section 10-11-3w, flowed 844 bbls. of oil the first hour, the flow being pinched. The gas was estimated at 17,000,000 feet a day. The total depth of the well is 6,450 feet in Wilcox sand.

Greater Seminole Field

During the week the Oklahoma Corporation Commission instructed Jarvis & Holmes, owners of No. 1 Narcone, SE cor. NW SW Section 9-7-8, west of Holdenville, to find a buyer for the gas from the well or shut it in. The commission is trying to prevent waste of gas in the area in producing wells. The well was originally completed for 435 bbls. of oil and 25,000,000 feet of gas a day from sand at 2,940-70 feet.

Gypsy Oil Co.'s No. 1 Charty, NE cor. SE SW Section 29-6-6, in the Konawa Pool, in Seminole County, which was originally completed at a total depth of 2,628 feet, was drilled deeper to 2,682 feet in the sand and flowed 602 bbls. of oil on the gauge of June 3 and 460 bbls. on the gauge of June 4.

The area west of Holdenville in Hughes County is developing large gas reserves. Jarvis & Holm's No. 1 Narcone, SE cor. NW SW Section 9-7-8, will be recompleted at the request of the Oklahoma Corporation Commission. It was originally completed for 25,000,000 feet and around 100 bbls. of oil a day. The gas has been allowed to blow wild to secure the oil production.

Empire Oil & Refining Co.'s No. 1 Harris, C SW SW Section 17-7-8, cored a sand from 3,005-18 feet with a showing of gas. Indications are that it would make a gas producer.

Burgher Oil Co. and others' No. 1 Charley, SW cor. NW SE Section 18-8-5, Mission area, has been spudded. The test is located south of two dry holes but is believed to be on structure. It is possible that it may find production in the Cromwell sand.

Another producer was found on the northwest edge of the Beebe Field, in Pontotoc County, by Lynch and others' No. 1 Newby, SE cor. NE NE Section 24-5-4. Oil and some water rose 1,600 feet in the hole. The oil and gas were found at 2,385-2,409 feet. Same operators have staked another location for No. 2 Newby, SW cor. NE NE Section 24-5-4, a west offset to the above producer.

Carr City Pool continues to be one of the most active areas in the Greater Seminole group. Three tests in the pool were nearing the producing horizons. Prairie Oil & Gas Co.'s No. 6 Hyde, NW cor. SE NW Section 2-8-5, found the top of the Simpson sand at 4,110 feet and a showing of oil was found at 4,150 feet. The top of the Wilcox sand was found at 4,155-65 feet. The well swabbed 155 bbls. of oil in 12 hours from the Wilcox sand and flowed 220 bbls. of oil from the Hun-

WILDCAT OPERATIONS IN OKLAHOMA

(Descriptions are East and North unless marked otherwise)

NORTHERN OKLAHOMA

ALFALFA COUNTY

Company, farm and location—	Remarks:
Smith Brothers' No. 1 Forbes, SE cor. NW NW Sec. 12-27-11w	Shut down 1,232 ft.
J. W. Bailey's No. 1 Acre, SW cor. NE Sec. 14-24-11w	Drlg. 5,460 ft.

BECKHAM COUNTY

Price-McFann's No. 1 Webster, C SW SW Sec. 34-8-26w	T. D. 2,344 ft.; plugged back to 1,890-1,900 ft.; 1,500,000 ft. gas completed.
Mid-Continent's No. 1 Schaff, C NE SW Sec. 22-11-22w	Waiting on cement to set 430 ft.
Mid-Texas Co.'s No. 1 Sidell, NE cor. SW SW Sec. 17-2-22w	Shut down 2,550 ft.
White et al's No. 1 Green, SW cor. Sec. 34-10-24w	Shut down 3,575 ft.

BLAINE COUNTY

Washoma Oil Co. et al's No. 1 Phillips, C NW SW Sec. 13-19-10w	Drlg. 5,033 ft.

CADDO COUNTY

Abernathy & Brown's No. 2 Houston, Sec. 24-6-13w	Shut down 1,115 ft.

COAL COUNTY

McGraw Oil Co.'s No. 1 Ward, NE SE Sec. 26-1-8	Drlg. 1,300 ft.
Whitney et al's No. 1 Miller, SE NE Sec. 10-2-8	Shut down 760 ft.

COMANCHE COUNTY

G. W. Stegner's No. 1 Doebel, C SW SW Sec. 3-3-9w	Shut down 1,450 ft.
J. R. Travis' No. 1 Pickett, NE cor. Sec. 3-1-11w	Shut down 900 ft.

GARFIELD COUNTY

E. L. Love et al's No. 1 White, SE cor. NW Sec. 9-24-6w	Shut down 5,850 ft.

GARVIN COUNTY

Malarnee et al's No. 1 Phillips, NE SW SE Sec. 24-2-2w	Drlg. 3,390 ft.
Skinner's No. 1 Elrod, SW cor. Sec. 13-2-3	Shut down 1,120 ft.

GREER COUNTY

French's No. 1 Murphy, SW NW Sec. 23-7-21w	Shut down 1,645 ft.

HARPER COUNTY

Sinclair Oil & Gas Co.'s No. 1 Howell, C SW SW Sec. 14-26-24w	20,000,000 ft. gas 5,350-5,400 ft.; total depth 5,539 ft.; shut down; sprayed 50 bbls. gasoline.

HASKELL COUNTY

Ault et al's No. 1 Harrison, CWL SE NE Sec. 14-9-19	Shut down 650 ft.
Ault et al's No. 1 Hall, NW SW SW Sec. 14-9-19	Shut down 2,000 ft.
Ault et al's No. 1 Hall, SE NW Sec. 25-9-19	Shut down 200 ft.
Holden's No. 1 Phillip, SE cor. Sec. 3-9-18e	Shut down 1,860 ft.
Marion Oil's No. 1 Sanders, NW NE NW Sec. 10-9-18e	Shut down 2,387 ft.

BRYAN COUNTY

Bryan County Oil's No. 1 Childs, NW SE SW Sec. 7-7-10	T. D. 650 ft.
Bush et al's No. 1 Commerce Trust, NE cor. Sec. 35-6s-9	T. D. 740 ft.; plugged back to 450-80 ft.

JEFFERSON COUNTY

Smith's No. 1 McCarty, SE NW NE Sec. 18-4s-8w	Location.
C. V. Chenault et al's No. 1 Grogan, SW NE SE Sec. 15-7s-6w	Shut down 1,327 ft.

LOVE COUNTY

Batson & Sterrette's No. 1 Dillard, SE NE NW Sec. 25-6s-3	Show 5 bbls. 1,585-96 ft.; T. D. 4,433 ft.; P. B. to 1,604 ft.; pumping.
Holmes et al's No. 1 Flannigan, NW cor. Sec. 2-8s-1	Rig abandoned.

(Continued on Page 84)

More from less

It is waste to produce more crude oil than we need even if we have plenty of it

It is waste to run 20,000 barrels through the crude stills to make 6,000 barrels of gasoline when, by cracking, we can make the 6,000 barrels of gasoline from 10,000 barrels of crude

The Dubbs process can do even better than that and it will be better gasoline

We don't have to worry about waste of oil, perhaps, but it is foolish to waste profits

Getting more from less at lower cost means conservation

Conservation of profits—that's where the Dubbs process excels

Universal Oil Products Co
Chicago. Illinois

Dubbs Cracking Process
Owner and Licensor

ton lime. Empire Oil & Refining Co.'s No. 3 Brown, NW cor. NE SE Section 3-8-5, flowed 12 bbls. of oil in 12 hours from the Sylvan shale at 4,061 feet. Prairie Oil & Gas Co.'s No. 2 Harjo, SW cor. NE NE Section 3-8-5, flowed 50 bbls. of oil from the Hunton lime at 3,954-73 feet.

The wildcat test near Tecumseh in Pottawatomie County, Amerada Petroleum Corp. and Droppleman Drilling Co.'s No. 1 Jones, SE cor. NW Section 21-8-3, is shutting down at a total depth of 4,878 feet.

Amerada Petroleum Corp.'s No. 2 Tiger, SE cor. SW NE Section 3-8-5, in the Carr City Pool, flowed 30 bbls. of oil from the Hunton lime, while drilling deeper in the Viola lime at 4,115 feet.

The new well of the Blackwell Oil & Gas Co. west of Holdenville, in Hughes County, has been shut in. The well is No. 1 Holmes, SW cor. NE SW Section 9-7-8. It was showing 25,000,000 feet of gas a day and 85 bbls. of oil a day when shut in.

A Wildcat Survey

A survey of the wildcat tests in the State indicate that only a few of those now drilling or shut down have much chance of finding production and opening new producing areas in the State, during the next few months. The tests are located in 35 different counties. Only a few are active.

In Oklahoma County five wildcat tests were shut down with little chance of any of them resuming drilling operations in the next few months. Litigation has followed the shutdown of all but one of them, and it is believed it will be some time before any of them resumes operations.

In Kay County in the northern part of the State several wildcat tests are shut down until the crude oil market advances, L. E. Mummert Drilling Co.'s No. 1 McCormick, NW cor. SE, Section 9-27-2, is shut down at 3,690 feet. Peters Petroleum Corp. and Buckles' No. 1 Hayes, NW cor. NE NW, Section 24-28-3, is shut down at a total depth of 3,-665 feet. Blankenship Petroleum Co. and others' No. 1 Hollenbeck, SW cor. NE SE, Section 18-27-2, spudded and shut down.

In the West Chandler Pool, in Lincoln County, Magnolia Petroleum Co.'s No. 1 Telford, SW cor. SE, Section 7-14-4, was rigging up standard tools at a total depth of 4,920 feet. It is expected to be the next well completed in the field. Tom Slick Oil Co. and Stanolind Oil & Gas Co.'s No. 3 Kentzelman, SW cor. NE SW, Section 7-14-4, found the Sylvan shale at 4,900 feet and was drilling deeper at 4,935 feet. Same company's No. 4 Kentzelman was drilling at 4,120 feet.

The wildcat test of Mid-Continent Petroleum Corp.'s No. 1 Lillis, NW cor. NE SE, Section 9-13-6, in Lincoln County, found a showing of water in the Wilcox sand at a total depth of 4,318 feet and is plugging back to the Hunton lime to test a showing of oil found in that formation.

Geophysical Parties Working

The Geophysical Research Corp. has four crews operating in Payne and Noble Counties. The activity is attracting considerable attention because of the low prices which were recently posted for all grades of crude in Oklahoma. Seismograph, magnetometer and other geophysical instruments are being used in the area in efforts to locate regional highs.

About a year ago the seismograph was used extensively in Noble County by crews employed by major oil companies with what is believed to be satisfactory results. Leases on which some dry holes have been drilled and which were allowed to lapse were again leased and in some cases a higher bonus was paid than for the original oil and gas rights.

Indications are that Noble County will be developed later when conditions within the oil industry have improved. Some leases and royalties in the area have brought what is considered to be fair prices in view of the oil situation.

Southern Operations

J. E. McCarty and others' No. 1 Norris, NE cor. SE, Section 23-2s-2w, Tatums Pool, Carter County, 1½ miles southeast of the Ed Cox Field, was rigging up rotary tools to test the 5,000-foot horizon.

Carter Oil Co.'s No. 2 Robb, SW cor. NW, Section 19-1s-2w, on the east edge of the Tatums Field, was preparing to spud. It is the south offset to the same company's No. 1 Robb, which was completed in March for 1,500 bbls. a day from sand at 1,741-1,856 feet.

K. D. Oil Co. and Frank Gouin's No. 1 Burton, C SW NW, Section 30-1s-2w, about a quarter of a mile south of production, was drilling at 1,875 feet. Trevlyn Oil Co.'s No. 1 Ratliff, NE cor. NW SW, Section 19-1s-2w, on the east edge of the field, was spudding.

Magnolia Petroleum Co.'s No. 1 Wirt Franklin, SW cor. NW NE, Section 15-1s-3w, located three-quarters of a mile northwest of production in the Tatums Field, was drilling at 650 feet.

In Jefferson County, C. V. Chenault and others' No. 1 Grogan, SE cor. NE, Section 15-7s-6w, is shut down for water at 1,440 feet in shale. Monarch Petroleum Co.'s No. 1 Gregg, SW cor., Section 36-3s-4w, about a mile south of production in the Healdton Field, was drilling at 3,065 feet.

In Love County in the southern part of the State, Batson, Starritt and Autry's No. 2 Autry, SE cor. NE, Section 27-6s-2e, was coring a hard sand with a showing of oil at 706 feet. The top of the sand was found at 692 feet. Same operators are preparing to abandon No. 1 Dillard, C SE NE, Section 25-6s-2, an old well drilled several years ago. A showing of oil was found in the test at 1,586-96 feet. However it was never completed as a commercial producer.

The semiwildcat test of Hearle-Hudson, No. 1 Williams, SW cor. SE NE, Section 24-7s-5, south of the Madill Field in Marshall County, was drilling at 400 feet and expecting to find the pay horizon in the few hundred feet. It is located in the Kingston area.

Greater Seminole Production

The production from the Greater Seminole area for the week ending June 4 was approximately 167,571 bbls. The first 12 pools listed below comprise the Seminole area which averaged 116,134 bbls. per day.

Pool—	Bbls.
Little River	22,650
East Little River	5,345
Carr City	13,450
Maud	2,008
Mission	6,305
Bowlegs	11,528
Earlsboro	15,645
South Earlsboro	5,676
East Earlsboro	15,085
Seminole	13,175
East Seminole	1,450
Searight	3,918
Total	116,134
Allen	11,720
Asher	629
Wanette	6,742
Konawa	7,605
Sasakwa	2,310
St. Louis-Pearson	22,431
Grand total	167,571

Oklahoma City Shipments

The total shipments from the Oklahoma City Field for the week ending June 6 were 913,435 bbls. The shipments by companies were as follows:

Company—	Bbls.
Champlin	4,356
Empire	214,101
Magnolia	9,593
Oklahoma	91,295
Operators	20,055
Prairie	9,296
Shell	80,558
Sinclair	271,317
Stanolind	154,513
I. T. I. O.	30,238
Tidal	4,703
Anderson-Prichard	4,365
Petroleum P. L.	2,275
Century	3,415
Crude P. L.	5,252
Capitol P. L.	8,109
Total	913,435
Daily average	130,491

The daily production and pipe line shipments from the Oklahoma City Field for the week ending June 6 were as follows:

Date—	Prod.	Wells	Shipments
May 31	82,574	51	144,245
June 1	54,403	53	104,277
June 2	269,271	99	102,691
June 3	179,001	113	123,608
June 4	267,969	124	130,962
June 5	219,529	113	138,266
June 6	154,089	118	169,386

Carter County

J. E. McCarty and others' No. 1 Norris, SE cor. NE NE, Section 23-2s-2w, is a machine.

Creek County

W. H. Whittington and others' No. 2 Char-co-te-tana, SE cor. NW NE, Section 9-17-10, is rigging up. McCurry and others moved a machine in for No. 2-A Fulsom, NE cor. NW SW SE, Section 32-17-11. Ben Curtis and others made location for No. 1-A Reynolds, SW cor. SE, Section 29-17-12. W. H. Whittington's No. 1 Char-co-te-tana, NE cor. NW NE, Section 9-17-10, has been completed for 2,000,000 feet of gas in sand 1,071-88 feet. Penmar Oil Co.'s No. 3 Tiger, NW cor. SW NW, Section 26-17-11, was deepened to 2,575 feet and abandoned. McCurry and others' No. 1-A Fulsom, NW cor. NE NW NE, Section 32-17-11, made 2,750,000 feet of gas in sand 533-50 feet.

Garfield County

Champlin Oil & Refining Co. has the rig up for No. 2 Gibson, NW cor. SE SE, Section 25-23-4w. No. 1-A Kindt, NW cor. NE NE, Section 36-23-4w, has been completed for 4,000,000 feet of gas in chat at 5,175 feet after plugging back from 5,532 feet in Wilcox sand. No. 1 Wambert, NE cor. NW, Section 36-23-4w, has been completed for 100 bbls. in chat at 5,218 feet after being plugged back from 5,238 feet. Mid-Kansas Oil & Gas Co. and Ramsey Petroleum Co.'s No. 1 Heitholt, NW cor. SE SE, Section 33-24-3w, is dry and abandoned at 5,097 feet. T. B. Slick estate and Ramsey Petroleum Co.'s No. 1 Fulkerson, NW cor. NE NW, Section 15-20-4w, has been abandoned at 6,160 feet.

Grady County

Badget & Cooper's No. 2 Milner, SE cor. NW SE SE, Section 23-4-8w, is rigging up. Margay Oil Co. moved material in for No. 2 Carson, CEL NE NE, Section 26-4-8w.

Harper County

Empire Oil & Refining Co.'s No. 1 Bruce, C NE SW, Section 12-25-20w, is dry and abandoned at 7,935 feet.

Haskell County

Holden & Ault's No. 1 Ellis, NW cor. SW NW NE, Section 1-9-18, is spudding.

Kay County

Wilright Gas Co.'s No. 1-A Wildegrade, NE cor. SW, Section 14-27-1, has been abandoned at 4,056 feet. Boucher and others' No. 1 Jefferson, NE cor. SW, Section 32-26-1w, is a dry hole at 4,634 feet. J. S. Pine's No. 1 Ogg, SW cor. SE SE, Section 35-25-1w, made 187,000 feet of gas in sand 830-35 feet.

McIntosh County

Jess Rebold has a machine on the location for No. 1-A Smith, CSL NW SW, Section 22-12-14.

Noble County

Magnolia Petroleum Co.'s No. 2-A Summers, SE cor. NW, Section 4-20-1w, has a show of gas in sand 3,410-21 feet and is waiting on cement to set. No. 1-A Hoffman, SW cor. SE SE, Section 16-

(Continued on Page 103)

SOUTHWESTERN DISTRICT SELECTS NEW OFFICERS AND COMMITTEES

By L. G. E. Bignell
Petroleum Engineering Editor

DALLAS, Tex., June 6.—Because the midyear meeting of the Division of Production of the American Petroleum Institute was to be held in Dallas this year the officers of the Southwestern District of the Institute decided they would not attempt a district meeting but would join in the activities of the major division,

E. Stanley Durward
New Chairman

holding only a business session. This session was held at noon Thursday in the form of a luncheon in the Baker Hotel, Dallas, and Chairman Walter H. Meier presided. About 30 members and guests were present.

Mr. Meier stated that the chapter meetings of the district had been held with fair regularity and had been well attended with a number of very interesting papers presented followed by discussions. Because of the activity in East Texas and the transfer to that area of many men from other districts it is proposed to organize a chapter there very soon.

It was suggested that one of the functions of these chapters will be to stimulate more public interest in the oil industry by holding meetings to which members of local organizations will be invited and the subjects selected would be of such character as to be of special interest to others outside of the industry.

Public Relations Committee

It is intended to appoint a public relations committee in each of the several chapters whose duties will be to handle the details of such general meetings and by the spread of this general idea it is hoped the public will become more conversant with the oil man's problems and learn that those things that retard growth

Walter H. Meier
Past Chairman

or prosperity in the petroleum industry affects the prosperity of the whole community and state.

Melbert Schwarz, vice chairman, submitted the report of the nomination com-

(Continued on Page 103)

The BRIDGEPORT Shopper's PAGE

MORE BARGAINS! Again we offer you many opportunities to save money on your equipment needs—and through cutting down your overhead, make more profit. Read this page carefully—and remember, these are but a few of hundreds of wonderful bargains now available. Wire or phone us at our expense and tell us what you need.

A PERSONAL MESSAGE

FROM PRESIDENT BUSCHOW

WHERE IS THE OIL INDUSTRY HEADED?

In my humble opinion — even though I might be accused of "bragging"—the oil business is the largest and most promising in the world. Today some of us may feel blue—but what other line of business is not also affected?

Oil and natural gas are nearly as essential to the world today as bread and butter. The world must have them, and no satisfactory substitute has ever been found. If we are not prospering, it's our own fault; we have what the world needs, and with the power and wealth which the oil industry controls, we have no one but ourselves to blame, if we do not get our just rewards for our efforts.

HEADQUARTERS FOR HUGHES PRODUCTS

Bridgeport Stores are headquarters for Hughes Bits, Cones, Valves, Core Bits and Tool Joints. Quick, satisfactory service guaranteed. It will pay you to get your Hughes Products requirements from a Bridgeport Store.

—o—

All Bridgeport manufactured products can be purchased through your supply store.

BARGAIN IN 10" SURFACE PIPE

East Texas Territory

1400 ft. of 10"—35 lb. Lapweld, good condition, ready for immediate delivery from our Kilgore store.
At ..... **$1.00 per foot**

GOOD USED 15½" LAPWELD CASING

Our Oklahoma City Branch has available good used, 15½" Lapweld casing. Can make prompt delivery.

LUCEY ROTARY BARGAIN

1—8" Lucey Rotary, like new. Only used on 1000 foot hole. Will deliver any place in Texas, Oklahoma or Kansas. A real bargain at **$3500.00**

ENGINE BARGAIN

We have on hand at Oklahoma City one 12x12 Gumbo Buster Twin enclosed Engine, shopped, and in first class condition, at only **$1500.00**

WEIGHT INDICATOR

One used 100 ton Martin-Decker Weight indicator, complete...**$200.00**

SPECIAL PRICES ON PUMPS

At McPherson, Kans.

1 Worthington Duplex Pump, 10 x 4½ x 10, shopped.

1 Snow Duplex Pump, 10x4½x10, shopped. Either one a real bargain at ..... **$250.00 each**

REAMER BODIES

We have on hand at Wichita, Kas., 3 Bridgeport double 3-point reamer bodies, shopped by us. Pins only returned once. A real buy, at
Only **$275.00**
F.O.B. any Mid-Continent point.

Will accept any make double 3-point reamer at $100 as part payment. On your next repair job it will pay you to get one of these tools.

BRIDGEPORT RENTALS

We maintain a highly developed rental service, on drilling and fishing tools, Swan underreamers (both types) and special equipment. In many instances you save money by using this service, instead of buying. You can wire or phone at our expense. Charges very reasonable. Special adjustments on rentals shipped any distance by common carrier. All Bridgeport men are capable of rendering proper service and furnishing information on rentals.

WORLD WIDE SERVICE

We give special attention to fulfilling the requirements for Bridgeport products in other countries than the United States, and also can furnish good used equipment. World-Wide Representatives, Lucey Products Corp., No. 3505 Woolworth Bldg., New York, N. Y.

A NEW SERVICE AT KILGORE, TEXAS

We offer rental service on complete or part strings of drill pipe, with tool joints on, in good condition, ready to go. 6⅝", complete strings, $1.00 per hundred feet per day. Less than complete strings, $1.25 per hundred feet per day.

4"—$500, minimum 5 days. $100 per day thereafter.

3½"—$1,000, minimum 5 days. $150 per day thereafter. Usual rental conditions. Can be purchased while on rental, at our lowest prices.

ALL SPECIAL AND USED MATERIAL OFFERED SUBJECT TO PRIOR SALE

BRIDGEPORT MACHINE COMPANY

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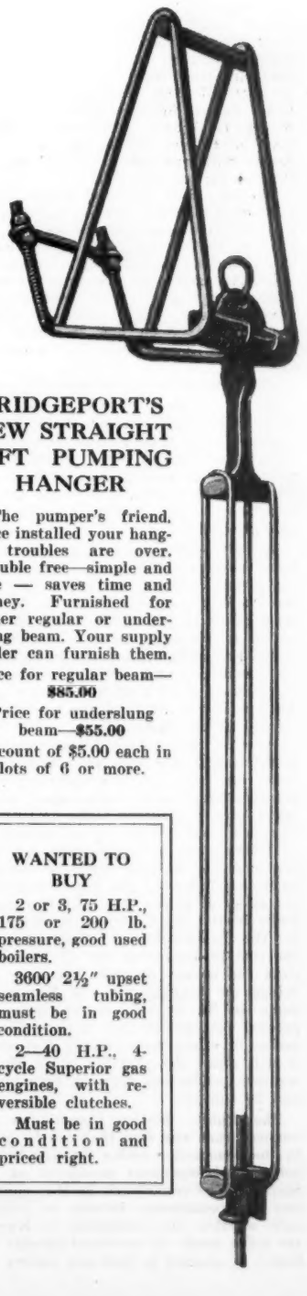
Wichita, McPherson, Russell and El Dorado, Kansas; Oklahoma City and Seminole, Okla.; Pampa and Kilgore, Texas.



BRIDGEPORT'S NEW STRAIGHT LIFT PUMPING HANGER

The pumper's friend. Once installed your hanger troubles are over. Trouble free—simple and safe — saves time and money. Furnished for either regular or underslung beam. Your supply dealer can furnish them.

Price for regular beam—**$85.00**

Price for underslung beam—**$55.00**

Discount of $5.00 each in lots of 6 or more.

WANTED TO BUY

2 or 3, 75 H.P., 175 or 200 lb. pressure, good used boilers.

3600' 2½" upset seamless tubing, must be in good condition.

2—40 H.P., 4-cycle Superior gas engines, with reversible clutches.

Must be in good condition and priced right.

Restricted Market Disturbs Kansans

Public Service Commission Trying to Find Additional Market for Crude Produced in the State. Big Potential

By W. A. Spinney
Staff Correspondent, Kansas Fields

Notwithstanding the low prices posted for crude oil on June 1, the production of Kansas continues to hold at steady levels. The daily average production for the week ending June 6 was approximately 106,700 bbls. New work in the different fields in the State also continues steady, for the same seven days the new operations having totaled 13. McPherson County continues to lead the State in active operations with a total of more than 60 active drilling wells.

The Public Service Commission appointed an advisory committee to assist the commission in the administration of the new oil proration law, which became effective May 28. The members of the committee were appointed with the approval of Governor Woodring and were announced by Thurman Hill, commissioner. They are Marvin Lee, Wichita, consulting geologist, and president of the Independent Producers Association; Ralph Pryor, Wichita, with Slick, Pryor & Lockhart, producers; Lee Scott, Wichita, with the Vickers Petroleum Co.; Rex Kent, Salina, filling station owner, and Nelson K. Moody, Independence, president of Prairie Oil & Gas Co. Mr. Moody will represent the crude oil purchasing companies.

Thurman Hill said the duties of the advisory committee will be to determine how the new proration law shall be applied to the various pools in the State. The committee will determine whether a statewide umpire be appointed or operating committees for each pool be used. Other duties of the committee include their assistance on how the rules and regulations of the new law would be applied.

Operators' Conference

During the week a conference was held in Wichita between the members of the Public Service Commission and oil operators from all parts of the State. The purpose of the meeting was to obtain the wishes of the producers as to the manner in which the new proration act is to be administered.

While the operators held different opinions, the majority of the producers present favored a committee and a paid umpire to direct the producers in the different pools in the State to be affected. Owing to the recent crude oil price cuts which the operators present at the meeting branded as unjustified in view of the curtailment of all field work and of production in the State, little was accomplished at the meeting.

Some of the producers who completed wildcat wells nearly a year ago, which wells have been shut in without any market outlet, because no one company would lay a pipe line to the wells, termed the new crude oil prices as confiscatory.

It was stated at the meeting that several thousand oil wells would be operated at a loss following the recent reduction in crude oil prices. The 12,000 stripper wells in the old fields in the State are for the time considered valueless because the cost of producing the oil is greater than the income derived. The price cut brings the average price of Kansas oil down to 34 cents a barrel. Some expressed the opinion that if the price remains in effect more than a few weeks it will mean the shutting in of all the stripper production covering between 15 and 20 counties.

The Public Service Commission announced that any step that can be taken by the commission under the new law to help the independent producers of the State will be considered. In this connection the commission intends to investigate whether the refineries in Kansas are using crude oil produced outside the State; to attempt to find new outlets for Kansas oil, and to help secure ratable taking of oil. It was indicated at the close of the meeting that a decision may be announced by the members of the Public Service Commission sometime this week.

Ritz-Canton a Big Field

The proposed pipe line of the Lario Oil & Gas Co. and others from Wichita to the Ritz-Canton area depends upon the Kansas Public Service Commission's administration and regulation of the new proration law. The commission's power to regulate the pipe lines of the State under the new conservation act will be considered by the members of the Kansas Public Service Commission. The Lario Oil & Gas Co. has developed a large potential production in the Ritz-Canton area. The pipe line project depends upon the attitude of the State in its enforcement of the proration law. It is estimated the line would cost around $1,000,000.

The potential of the Ritz-Canton Pool, in McPherson County, is believed to have increased to 100,000 bbls. a day on June 1. The pool has an outlet of approximately 6,300 bbls. a day. The field is operating at 7 per cent of the potential output under the umpire's orders.

McPherson Oil & Gas Co.'s No. 2 Salthouse, in Section 13-19-2w, was flowing 30 bbls. an hour from the chat at a total depth of 2,969 feet.

Stearns-Streeter Co.'s No. 1 Chinberg, in Section 15-19-2w, in the Decker gas field of the Ritz-Canton area, swabbed 460 bbls. of oil in 12 hours, giving the well a potential rating of 920 bbls. a day from the chat.

Madison and others' No. 1 Hale, SE cor. NE Section 24-19-2w, a half mile northwest extension to the Ritz-Canton area, was given a potential of 2,714 bbls. a day from the Viola lime formation.

Sedgwick County

The forty-third oil well was completed in the Eastborough Pool, in Sedgwick County during the week. It was Magnolia Petroleum Co.'s No. 5 Wheeler, NW cor. SE NE, Section 19-27-2. The well is estimated to be good for 200 bbls. a day from the chat at 2,964-67 feet. After being swabbed a few hours it was put on the pump.

Derby Oil Co.'s No. 5 Eastborough, NE cor. SW NE, Section 19-27-2, the west offset found the top of the chat at 2,951 feet where the casing is being cemented. The same company is drilling No. 6 Eastborough, which is expected to be completed in about 10 days.

Z. N. Dunlap and others plan to drill 18 shallow tests for gas on a 1,400-acre block of leases southeast of Winfield, in Cowley County. The acreage is located in Sections 4, 5, 6 and 7, Township 33, Range 5. The tests expect to find the gas at approximately 700 feet.

Another test in Greenwood County that will be given a shot is Lyke and others' No. 1 Hillman, in Section 35-23-11, 2 miles north of Hamilton. The production was estimated at 150 bbls. a day.

Gore and Markus' No. 1 W. O. Smith, SW cor. NE, Section 6-24-12, Greenwood County, is estimated at 200 bbls. a day, from sand at 1,711-44 feet. Oil rose 1,500 feet in the hole in 11 hours. The well is located about a half mile southeast of other producing wells in the Patterson Pool, where some large producers have been found. Same operators made another location for a test at No. 1 C. O. Davis, NW cor. SE, Section 6-24-12. The lease was farmed out by the Tidal Oil Co.

Some interest is being shown in northern Atchison and southern Brown Counties, in the northeastern part of the State. A block of 5,000 acres was assembled during the winter in the northwestern part of Atchison County and a second block across the county line in Brown County near the townsite of Horton. The leases in the block were taken for a 5-year period. Operations are to be started in two years, or a rental of $1 an acre must be paid. It is believed the drilling of several tests may be started in the fall of this year.

J. H. Eyeman and others' expected to start operations on a test on the Peterson farm, 4 miles east of Everest, in the southeastern part of Brown County. Both shallow oil and gas is expected.

Greenwood County

The Prairie Oil & Gas Co. made location for No. 2 Parrish, NW cor. SW NE, Section 16-24-12.

Lincoln County

M. R. Buck and others made location for No. 1 Schulz, SE cor. NE SW, Section 19-11-6w.

McPherson County

Youker and others made location for No. 1 Eaton, NW cor. NE, Section 26-19-2w. Rosenthal and others moved the rig in for No. 1 Dichman, NE cor. SE SW, Section 35-19-2w. Miller and others staked location for No. 1 Laura Shaw, NW cor. SW, Section 21-19-1w. Lario Oil Co. and Shell Petroleum Corp. made location for No. 2 Sellers, NE cor., Section 31-19-1w. Sinclair Oil & Gas Co.'s No. 10 Morehouse, NE cor. NW NE, Section 4-21-3w, is rigging up to deepen from 3,305 feet. McPherson Oil & Gas Co. and Shell Petroleum Corp.'s No. 2-B Meyers, C NW SE, Section 14-19-2w, has been completed for 55,000,000 feet of gas in sand 2,885-2,918 feet. Stearns & Streeter and Shell Petroleum Corp.'s No. 1 Chinberg, C NE NW, Section 15-19-2w, was completed for 920 bbls. in chat 2,932-82 feet. Madison and Shell Petroleum Corp.'s No. 1 Hale, SE cor. NE, Section 24-19-2w, produced 2,714 bbls. from Viola lime 3,397-3,414 feet. Lario Oil Co. and Shell Petroleum Corp.'s No. 1 Wiggers, NE cor., Section 36-19-2w, has been completed for 2,750 bbls. in Viola lime 3,404-14 feet. Gypsy Oil Co.'s No. 1 E. Stucky, SE cor. SW SE, Section 33-20-3w, made 1,250 bbls. from Silicious lime 3,337-57 feet.

Rice County

Hipple & Rogers' No. 1 Rainey, NW cor. SE, Section 3-21-6w, has been deepened from 3,390 feet to 3,404 feet and is producing 83 bbls. an hour. Twin Drilling Co. and Phillips Petroleum Co.'s No. 1 William Rice, SW cor. NE, Section 3-21-6w, has been deepened from 3,380 feet to 3,394 feet and completed for 960 bbls. Muth Brothers' No. 1 Freeman, SE cor., Section 4-21-6w, is preparing to deepen from 3,400 feet.

WILDCAT OPERATIONS IN KANSAS

(Descriptions are East unless marked otherwise)

Company, farm and location—	Remarks:
BARTON COUNTY	
Syndicate Oil Co.'s No. 1 Boertz, NW SE SE Sec. 13-18-12w	Shut down 2,440 ft.
Skelton Oil Co.'s No. 1 Ott, C SE SE Sec. 16-19-14w	Drlg. 2,252 ft.
McCool et al's No. 1 Tsern, NW SE NE Sec. 12-20-11w	Shut down 1,680 ft.
CHASE COUNTY	
Borden et al's No. 1 Atkinson, NW SE Sec. 18-18-7	Rig on ground.
Kline et al's No. 1 Elliston, C SE SE Sec. 21-19-6	Drlg. 583 ft.
CLAY COUNTY	
Crystal Oil et al's No. 1 Tivier, SW cor. Sec. 19-8-2	Shut down 2,500 ft.
COFFEY COUNTY	
Heyburg's No. 1 Kroft, SE SW SE Sec. 36-23-14	Shut down 1,565 ft.
Roberts et al's No. 1 Hay, SW SE NW Sec. 32-22-15	Shut down 1,250 ft.
COWLEY COUNTY	
Leman et al's No. 1 Hill, SE NE Sec. 27-33-4	Shut down 680 ft.
Fisher et al's No. 1 Hurt, C SW SE SE Sec. 11-34-3	Rig.
Roth & Faurot's No. 1 Reedy, SW NW NE Sec. 8-32-6	Shut down 1,040 ft.
DICKINSON COUNTY	
Severs et al's No. 1 Lavengood, NE SW Sec. 13-13-2	Shut down 3,850 ft.
ELLSWORTH COUNTY	
Gilmore Oil et al's No. 1 Sturm, NW SW Sec. 21-17-9w	Silicious lime 3,243 ft.; shut down 3,295 ft.; plugged back to 3,264 ft.; no results; abnd.
Hershey et al's No. 1 Schultz, C NE Sec. 9-14-8w	Drlg. 2,080 ft.
Alyward et al's No. 1 Stratman, SE NW SE Sec. 1-17-10w	Silicious 3,255-71 ft.; 117 bbls. 2 hrs.; shut in; est. 2,000 bbls.; no pipe line connection.
Aladdin Pet.'s No. 1 Stoddenberg, C SW Sec. 22-16-10w	Drlg. 2,065 ft.
Milton et al's No. 1 Koster, SE NE Sec. 6-14-9w	Drlg. 2,976 ft.
FORD COUNTY	
Carter Oil Co.'s No. 1 Everett, C NE Sec. 32-29-21w	Drlg. 4,082 ft.
Swain et al's No. 1 Taylor, C NW Sec. 21-25-24w	Drlg. 5,105 ft.
GRAHAM COUNTY	
Schleimeyer et al's No. 1 Clark, SW NE NE Sec. 11-9-25w	Drlg. 4,436 ft.
HARPER COUNTY	
Beeler et al's No. 1 Bear, C NE Sec. 21-36-6w	Shut down 1,820 ft.
KINGMAN COUNTY	
Skelly Oil's No. 1 Miles, NE cor. Sec. 30-27-10w	1,635-40 ft. 2,000,000 ft. gas; at 2,005-20 ft. 6,000,000 ft. gas; at 2,133-42 ft. 3,000,000 ft. gas; showing oil 3,385 ft.; T. D. 3,441 ft.; S. D.; estimated at 600 bbls. a day.
LYON COUNTY	
Sheedy et al's No. 1 Brown, C W half SE Sec. 19-20-11	Abandoned 2,428-50 ft.; water.
MARION COUNTY	
Midwell's No. 1 La Master, NW cor. Sec. 21-22-4	Shut down 650 ft.
MORTON COUNTY	
Hydraulic Oil Co.'s No. 1 State Land, NW SE Sec. 32-34-43w	T. D. 3,640 ft.; shut down.
MORRIS COUNTY	
Urschel et al's No. 1 Bersuch, NW SE NW Sec. 10-17-7	Machine.
Hankerson et al's No. 1 Cessman, SW SE Sec. 24-16-9	Cleaning out 2,260 ft.
NESS COUNTY	
Gypsy Oil Co.'s No. 1 Coleman, C SW NE Sec. 25-17-25w	Shut down 4,715 ft.
NORTON COUNTY	
Richards et al's No. 1 Colby, Sec. 17-4-21w	Rig.
OSAGE COUNTY	
Briggs & Smith's No. 1 Wood, SE NW Sec. 21-14-15	Shut down 1,525 ft.
Fields' No. 1 Usker, SE cor. Sec. 35-16-17	Shut down 400 ft.
RAWLINS COUNTY	
J. G. Durham et al's No. 1 Weaver, SE cor. Sec. 3-3-35w	Drlg. 3,150 ft.

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Only Completions in Zwolle and Urbana

Two Gas Wells in Richland Parish and Four Dry Holes Reported in North Louisiana-Arkansas Area

By J. R. Crumpton

SHREVEPORT, La., June 8.—Much apprehension is evident in the North Louisiana and Arkansas districts as a result of the drastic cut in crude oil prices announced Wednesday of last week, bringing them to the lowest levels recorded in over 20 years. Practically all of the wells in the several pools are small pumpers and the lifting charges, plus an 11-cent state severance tax in Louisiana, makes the cost exceed by far the present posted prices.

A most recent development is the announcement to the operators in the Homer, Haynesville, Cotton Valley and Stephens Fields by the Louisiana Oil Refining Corp., a subsidiary of Southern Cities, that it will withdraw from those fields on June 15. This announcement had been made prior to the last cut in prices, and officials of the company cannot say whether this will cause the order to be reversed. It is a well known fact though, that the two refineries of this company in Shreveport are being supplied to capacity with crude from the East Texas fields, much of it their own production through the Arkansas Fuel Oil Co., another subsidiary of the Cities Service group.

Nine Completions

There were only nine completions reported in the district, three were producers, with two gas wells and four dry holes. Two of the producers were in the Zwolle Field of Sabine Parish with the completion of W. M. Coates' No. 4-A Sabine Lumber Co., Section 1-7-12, flowing 150 bbls. from a total depth of 2,297 feet, and Jordan Drilling Co.'s No. 2 Louisiana Long Leaf Lumber Co., Section 3-7-11, as a 50-bbl. pumper. In the Urbana district of Union County, Arkansas, the Marine Oil Co.'s No. 1 Union Saw Mill Co., Section 3-18-13, is flowing 175 bbls. daily from 3,551 feet. Richland Parish furnished its customary gassers, the Palmer Corp. completing its No. 1 Clement, Section 10-16-6, gauging 20,520,000 feet from 2,400 feet with only 385 pounds rock pressure. The United Gas Public Service Co. plugged back from 2,581 feet to 2,460 feet in its No. 4 Earle, Section 1-16-5, but the results were only nominal, the well gauging slightly over 3,000,000 feet of gas with 830 pounds rock pressure.

Of the four dry holes, one was a recently begun wildcat in Columbia County, Arkansas, Joe Modisett and others abandoning their No. 1 Sharklee, Section 33-16-19, at 2,357 feet. The United Gas Public Service Co. made another failure in Concordia Parish with the abandonment of its No. 1 Hughes, Section 49-8-10, at 1,740 feet. This company completed one small gasser in that aren at less than 1,200 feet but has met with two failures since the successful completion. Harrison County, Texas, registered another dry hole with the abandonment of Rowan & Nichols' No. 1 Bussy estate, E. H. Merchant Survey, at 3,561 feet, and in Sabine Parish, the Sabine Royalties Co. abandoned its No. 1 Skinner, Section 5-8-11, at 2,634 feet.

Louisiana Drilling Operations

The Ark-La Pipe Line Co. set 15½-inch casing at 112 feet in its No. 1 Gayoso Co., Section 14-16-10, Bienville Parish, and is drilling in sandy shale at 2,382 feet. The test is in the Lake Bisteneau gas area and will probably be drilled to the Trinity formation. In Bossier Parish the Flint River Oil Co. made a drill stem test from 2,612-30 feet in its No. 1 DeMoss, Section 22-22-13, and had a small show of oil and gas. The total depth is 2,702 feet. Dr. W. N. Hankins is drilling in the Nacatoch formation at 1,000 feet on his No. 1 Newell, Section 12-19-11, 2 miles northeast of the shallow Bellevue Field in Bossier Parish, and D. L. Perkins has set 10-inch surface casing at 120 feet on his No. 1 Ardis & Co., Section 13-15-11, in the southern part of the parish near the Elm Grove Field.

In Caddo Parish, the Pelican Natural Gas Co., after making little progress for several weeks, has changed to heavier drill stem in its No. 1 Cooper, Section 29-18-14, and is drilling at 2,994 feet. This well is a deep test wildcat and is being watched with much interest. In the Rhodessa district, North Caddo Parish, the United Gas Public Service Co., is drilling in lime at 3,032 feet in its No. 1 Smith, Section 33-23-16. Another wildcat of interest is being drilled about 7 miles northeast of the Homer Field in Claiborne Parish, the Leue Oil Co. having reached a depth of 1,900 feet on its No. 1 Kinder, Section 2-21-7. De Soto Parish has four operations as follows: E. T. Oakes' No. 1 Bryant, Section 30-13-15, drilling at 1,577 feet; Ben Merditt's No. 1 Wollumns, Section 29-12-12, coring 2,634 feet; Rellitt Oil Co.'s No. 1 Gannon heirs, Section 12-11-16, drilling at 1,015 feet, and Walters-Nicholson are rigging up on their No. 1 Jim Guy, Section 3-11-13.

In the Zwolle Field of Sabine Parish, W. M. Coates is drilling at 2,190 feet on his No. 1 McNeely, Section 14-77-11; R. L. Gay's No. 1-A Long-Bell Lumber Co., Section 10-8-13, is drilling at 3,200 feet. Hawkins & Antoon junked their first hole known as No. 1 Newton, Section 1-7-11, at 1,550 feet and have skidded over drilling 500 feet on their second hole. J. J. Keen, trustee, has set 8-inch casing in his No. 1 Belton, Section 31-9-13, at 1,590 feet, and will drill the plug and make a test within a few days. This well is about 7 miles northwest of production in the Zwolle Field and the operators are confidently expecting a producer. Several wells in this field have set 6-inch casing over the pay sand during the week and four wells are standing with various amounts of oil in the hole, waiting on standard rigs.

EAST TEXAS

Shelby County in East Texas continues to get the play in the wildcat areas. The Sloan-Tokio Oil Co.'s No. 1 Windham, H. English Survey, made two heads of oil four hours apart Wednesday of last week. The oil is coming from a broken chalk formation at 3,399 feet. After an unsuccessful attempt to bring in the well, setting packer with screen, the operators are cementing 4½-inch casing. If the test proves unsuccessful, another well will be drilled about 1 mile south. The same company's No. 1 Sanford, M. M. Vann Survey, topped the Pecan Gap at 2,350 feet and is drilling at 2,825 feet. Other operations in Shelby County follows: Bradley & Kadane's No. 1 Ashberry, G. W. Mitchell Survey, drilling in sandy shale at 2,660 feet; E. L. Chapman is drilling in lime at 3,562 feet on his No. 1 Pickering Lumber Co., C. E. Henry Survey; Chapparal Oil Co. is arranging to resume drilling after being shut down all year on its No. 2 Holt, Matthew Moore Survey; H. H. Gracey is drilling at 2,025 feet on his No. 1 Morrison, William English Survey; Joiner and others' No. 1 Billingsly, J. Bowlin Survey, began May 30, set 10-inch casing at 174 feet and are drilling at 500 feet; Henry Maulding's No. 1 Frost Lumber Co., A. D. Fountain Survey, is changing rigs at 1,880 feet, and Schultz and others are drilling at 2,340 feet on their No. 1 Hughes, J. Clay Survey.

Two deep tests in the Trinity gas area of Panola County are making good progress. The Ark-La Pipe Line Co. is drilling at 2,500 feet on its No. 14 Werner, Ben C. Jordan Survey, and United Production Co.'s No. 10 Werner, same survey, has reached a depth of 3,490 feet.

Daily Average Runs

Daily average runs for the several pools were:

NORTH LOUISIANA

	Bbls.
Caddo, light	7,250
Caddo, heavy	2,770
Homer	3,200
Haynesville	5,660
DeSoto and Red River	2,630
Elm Grove	495
Bellevue	480
Cotton Valley	1,740
Urania	4,360
Pleasant Hill	400
Sarepta-Carterville	1,210
Zwolle	7,040
Holly	535
Total North Louisiana	37,770
Total previous week	38,655
Decrease	885

ARKANSAS

El Dorado	3,580
Smackover, light	4,165
Smackover, heavy	30,755
Stephens	860
Nevada	970
Lisbon	715
Champagnolle	2,900
Urbana	1,760
Bradley (S. D.)	.....
Total Arkansas	45,705
Total previous week	46,245
Decrease	540
Total both states	83,475
Total previous week	84,900
Decrease	1,425

LOUISIANA-ARKANSAS PROVEN AREAS

NORTH LOUISIANA

BOSSIER PARISH

Company, farm and location— Remarks:

H. I. Morgan's No. 13-A Kendrick, 669 ft. E, 330 ft. S. NW cor. SE SE, Sec. 22-19-11.... Skidded 50 ft. west; set 10-in. 278 ft; drlg. 555 ft.

CADDO PARISH—GREENWOOD

Calatex O. & G. Co.'s No. 1 Edgar, 1,460 ft. S, 1,900 ft. E, NW cor., Sec. 17-16-16.... Temporarily abd.

Calatex O. & G. Co.'s No. 1 McAnn-Alfred, 1,310 ft. S, 970 ft. E, NW cor., Sec. 17-16-16.... Location temp. abd.

CADDO PARISH—OIL CITY

Trio Corp.'s No. 1 Levee Board, 212 ft. S, 500 ft. E, NW cor., Sec. 17-20-15.... 1,220 ft. oil in hole 2,265 ft; W.O. S.R.

CADDO PARISH—PINE ISLAND

Haynes Bros.' No. 2 Spell, 956 ft. W, 200 ft. N, SE cor. SE, Sec. 15-21-15.... S.D. 3962 ft.

J. T. McCormick's No. 1 C. B. Christian, 330 ft. S, 300 ft. W, NE cor. SW, Sec. 27-21-15.... S.D. 1,335 ft.

Shreveport Oil Corp.'s No. 2-B Muslow, 1,000 ft. S, 300 ft. E, NW cor., Sec. 32-21-15.... Tested dry 2,125 ft; W.O.

Simplex Oil Co.'s No. 1 Youree-Glassell, 500 ft. N and E, C, Sec. 13-20-15.... Set 10-in. 150 ft; S.D.

MOREHOUSE PARISH

Bahan & Bahan's No. 4 Feasel, 900 ft. W, 300 ft. S, NE cor., Sec. 2-20-4.... Location.

OUACHITA PARISH

Ark-La. P. L. Co.'s No. 6 McInnery, 700 ft. N and E, SW cor. SW NW, Sec. 28-19-4e.... Location.

Jordan Drlg. Co.'s No. 7 Cole, 265 ft. S, 1,459 ft. W, NE cor., Sec. 49, in Sec. 50-18-4.... Location.

United Carbon Co.'s No. 6 Spade, 1,130 ft. S, 140 ft. E, NW cor., Sec. 27-19-4.... Location.

RICHLAND PARISH

Hope Prod. Co.'s No. 3 Noble, 2,049 ft. S, 2,607 ft. E, NW cor., Sec. 1-15-8e.... Set 6-in. 2,269 ft.

Palmer Corp.'s No. 1 Clement, 3,960 ft. N, 1,320 ft. E, SW cor., Sec. 10-16-6.... 20,520,000 ft. gas 2,400 ft.

Pelican Nat. Gas Co.'s No. 2 Chapman, 660 ft. N and W, SE cor. SW, Sec. 14-16-6e.... Began June 1; set 12½-in. 184 ft.

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WILDCAT OPERATIONS IN LOUISIANA-ARKANSAS

(Rotary operations unless otherwise designated)

NORTH LOUISIANA

BIENVILLE PARISH

Company, farm and location— Remarks:

Ark.-La. P. L. Co.'s No. 1 Giddens, 560 ft. N, 660 ft. E, SW cor. NW SW, Sec. 14-16-10.... Drlg. hard sandy shale 2,382 ft.

BOSSIER PARISH

Andrews & Davlin's No. 1 Nattin, 100 ft. N, 250 ft. W, C, Sec. 15-22-14.... Drlg. hard lime 2,868 ft; (corrected depth).

Flint River Oil Co.'s No. 1 C. L. DeMoss, 200 ft. S and E, NW cor. SE NW, Sec. 22-22-13.... S.D. 2,702 ft.

Dr. W. N. Hankins' No. 1 Newell, 300 ft. S and W, NE cor., Sec. 12-19-11.... Drlg. 1,000 ft.

D. L. Perkins' No. 1 Ardis & Co., 1,127 ft. N, 198 ft. E, SW cor., Sec. 13-15-11.... Began June 3; set 10-in. 120 ft.

D. L. Perkins' No. 1 J. W. Glover et al, 560 ft. N and W, SE cor. NE, Sec. 23-15-11.... Location.

Rombaugh et al's No. 1 Allison, SW SE, Sec. 10-19-13.... S.D. 1,600 ft.

CADDO PARISH

Pelican Nat. Gas Co.'s No. 1 Cooper et al, 1,810 ft. E, 1,064 ft. S, NW cor., Sec. 29-18-14.... Drlg. 2,994 ft.

United Gas Public Service Co.'s No. 1 M. K. Smith, 660 ft. S, 2,640 ft. W, NE cor., Sec. 33-23-16.... Drlg. lime 3,032 ft.

CALDWELL PARISH

Carter Bell's No. 1 Taylor, 150 ft. S, 150 ft. E, NW cor. NE SE, Sec. 17-14-4.... Derrick.

Hudson et al's No. 1 Burton, Sec. 35-12-2e.... S.D. 2,950 ft.

CATAHOULA PARISH

National Drlg. Co.'s No. 1 Marsh McMiller, 70 ft. N, 100 ft. W, C, Sec. 26-9-6.... T.A. 3,097 ft.

CLAIBORNE PARISH

Leue Oil Co.'s No. 1 Kinder, 154 ft. N, 642 ft. E, SW cor. SE, Sec. 2-21-7.... Drlg. 1,900 ft.

CONCORDIA PARISH

United Gas Public Service Co.'s No. 1 Hughes, 660 ft. S. 45° 30' E. 660 ft. N 60° 30' E of NW cor., Sec. 49-8-10.... Dry and abd. 1,740 ft.

DE SOTO PARISH

Keatchie O. & G. Co.'s No. 1 Hallie Smith (was H. E. Weichert's), NE SE, Sec. 31-14-15.... S.D. 2,350 ft.

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Barbers Hill Has Another Good Well

Orchard Dome Production Extended. Southern Victoria County Well Blows Wild and Is Killed. Effect of Price Cut

By Neil Williams
Staff Correspondent, Gulf Coast Fields

HOUSTON, Tex., June 8.—General reductions in crude prices posted the past week are expected to prove a hard blow to most Gulf Coast fields and operators. If the new prices, which are from 16 to 26 cents below previous postings, are maintained any length of time it is probable that a large number of old settled wells may be forced to shut down. Coastal operators already had accomplished a substantial curtailment.

The new price scale on the Gulf Coast is well under the actual cost of lifting crude in most Coastal fields, particularly the old areas and in deep sands. A great part of the oil on the Coast is pumping production and the bulk of it is accompanied by heavy volumes of water in proportion to the amount of oil recovered. In such fields as Orange, the oil produced runs less than 5 per cent of the total output of fluid and from sands below 4,000 feet, the margin of profit, if any, has always been small.

The elimination of a separate classification for "Grade A" crude and the placing of this oil and "Grade B" on a parity under one gravity scale possibly is the most important development brought about by the price reductions the past week. Grade A, the original Coastal crude and on which the reputation of Gulf Coast lubricant stock was built, has always been rated higher than Grade B, which constitutes the bulk of the new production, and has brought higher prices than all except lighter gravities of Grade B.

As all Grade A oil is under 25 gravity it received the greatest cut of all Coastal crudes, which is felt hardest by old settled areas, primarily producers of Grade A oil. Grade B, with a larger content of gasoline and other lighter fractions, is a product more of the newer areas and deeper sands. The revisions would indicate that the lubricant content, once the pride of Coastal oils, no longer is the basic value of these crudes as the oils with the greatest lub content now are the lowest in price.

Barbers Hill Producer

Field developments on the coast continued slow the past week with few completions of importance. The best well brought in in some time was completed at Barbers Hill in Humphreys Corp.'s No. 1 Anna Davis, 475 feet from the north line and 71 feet from the east line of Strip 6, Henry Griffith League, north flank of the dome. This well with five joints of screen set in sand at 5,323 feet flowed by gauge 2,176 bbls. in the first 20 hours, or at the rate of approximately 2,000 bbls. daily, through an eighteen-thirty-seconds-inch choke, pressure 580 pounds.

Sand in this test was found after drilling through 1,584 feet of salt overhang from 1,400 feet to 2,984 feet. The well is an offset to the same company's No. 1 Louise Fitzgerald, completed several months ago flowing 90 bbls. hourly from sand at 5,240 feet, and which also drilled through salt. Two other good subsalt producers, No. 1 Fitzgerald and No. 2-B Barber, also have been brought in in that area, in addition to this company's No. 1 Morgan, discovery well on that flank, and No. 2 Scott, both of the latter two wells being small producers from deeper horizons farther out from the dome and off the salt.

Barbers Hill, where development has been declining rapidly for several weeks following an active play, yielded two other new wells during the week, these being on the west flank of the dome. The better of these was The Texas Company's No. 3 Winfree, which flowed by gauge 227 bbls. in the first six hours, 110 pounds pressure through a five-eighths-inch choke. The same company's No. 2 Winfree flowed 1,000 bbls. of fluid but of this only 10 per cent was oil. The former was in sand at 5,630 feet and the latter at 5,622 feet. Over the week end, Humphreys Corp.'s No. 5 E. H. Winfree in the same sector was testing sand at 5,540 feet.

Orchard Dome

Gulf Production Co. extended production another 600 feet around the south side of the Orchard Dome with the completion of its No. 29 Moore, John Frazier Survey. This well came in flowing 400 bbls. of pipe line oil daily through a half-inch choke from sand at 4,167 feet with one joint of screen. No new locations have been made and this dome is another of the many on the coast on which operations have been suspended temporarily.

Sun Oil Co. also has made a slight extension northward on the west flank of Humble in its No. 16 Bender which has been completed as a good gas well spraying oil through a 3-inch open line from sand at 4,027 feet. Only four rigs are left running at Humble and two of these are workovers.

Other completions of the week included Sun Oil Co.'s No. 5 Carraway, Clay Creek, pumping 35 bbls. daily from sand at 1,380 feet; Cranfill-Reynolds Co.'s No. 2 Moores Bluff, Esperson, 40 bbls. of fluid, 40 per cent water, 2,350 feet; Rio Bravo Oil Co.'s No. 117-A Cotton, Saratoga, 20 bbls. daily, 500 feet; Gulf Refining Co.'s No. 27 Lutcher-Moore, Starks, pumping 25 bbls., 1,268 feet. United North & South Development Co. has abandoned as dry at 5,585 feet its No. 1 H. P. Lockwood, J. R. Johnson Survey, Colorado County.

Southern Victoria County

In the lower Gulf Coast County, T. B. Slick estate's No. 1 McFaddin, wildcat in the J. Vairan Survey, southern Victoria County, blew in after setting 21 feet of 4½-inch screen in sand at a total depth of 3,512 feet. However, blowing tubing up into the christmas tree, connections were broken causing the well to blow wild. The well has been successfully killed and as soon as connections can be repaired and screen and tubing reset, another attempt will be made to complete it.

This well, which several weeks ago made a drill stem test in this sand showing 650 pounds pressure on a three-eighths-inch choke, has been the center of interest among many operators throughout the lower Coastal counties. Location of the wildcat is about 3½ miles north of United Production Corp.'s two gas wells, Nos. 1 and 2 McFaddin, drilled by Lion Oil & Refining Co. on a block owned jointly by these companies.

So far it has not been definitely determined whether Slick's well marks an extension of the United and Lion field or opens an entirely new pool. The sand is somewhat higher than in the United wells, the latter being at approximately 3,740 feet. No tests have been drilled between the two areas although United Production Corp. at present is drilling one north of its two gassers in the direction of the Slick well and if it proves a well it will indicate a trend in the direction of the Slick well. Dry holes to the east, south and west of the United wells seem to have defined the end of the field in those directions, leaving north the only way to move. United's test, No. 4-A McFaddin, at latest report was drilling hard sand at 2,285 feet. A sand was encountered at 2,219-24 feet but a drill stem test showed salt water.

Other wildcats in Victoria County include Simpson-Fell-Westheimer's No. 1 Levi, S.A.&M.G. Survey No. 4, about 15 miles to the north of the Slick well, which tested salt water at 4,058 feet and now is drilling below 4,340 feet. The Texas Company has started drilling its No. 3 McFaddin, located to the west of No. 2, completed earlier in the year as a gas well at 2,025 feet but now shut in. The latter well is some 4 miles west of United's two gas wells. In the north part of the county, Houston Oil Co.'s No. 1 Conrad, T.&N.O. Survey No. 1, has cemented 13⅜-inch surface pipe at 641 feet.

Refugio District

Of particular interest are three new tests being started in the Refugio district. United Production Co. has a rig up for No. 1-B Fox, William Hews and L. Brown Survey, southward offset to the same company's No. 1-A Fox, wildcat producers, 1½ miles north of the Lambert Pool and 3½ miles northeast of the main Refugio Field. No. 1-A Fox was completed early in May flowing 28 bbls. hourly but later increased its flow. This company also has made location for No. 4 M. F. Lambert, east offset to No. 1-B Fox. T. P. Morgan has a rig up for No. 1 Lambert, approximately 2,000 feet north of the Lambert Pool, where three producers were completed early in 1930, and located between that pool and United's Fox wildcat. These tests will mark an attempt to link the recently completed Fox well with the Lambert Pool. Exact locations for these tests are indicated in the accompanying table of drilling operations.

Port Neches Field

Back in the salt dome district, The Texas Company is preparing to resume development at its Port Neches Field in southwestern Orange County, Texas. A rig already is up for this company's No. 1 Polk-Kuhn-Glass and location has been made for No. 3 Kuhn. The first is approximately 1,000 feet east of the present field while No. 3 Kuhn is just south of the pool.

These will mean the first new drilling to be started at this field since the completion by The Texas Company of its No. 2 Stark as a 20-bbl. pumper in a sand at 4,144 feet last December. A total of six wells, all producers, have been drilled by The Texas Company at Port Neches, the discovery well being brought in in May, 1929. The field has a daily production betwen 1,200 and 1,600 bbls. The only other drilling in the

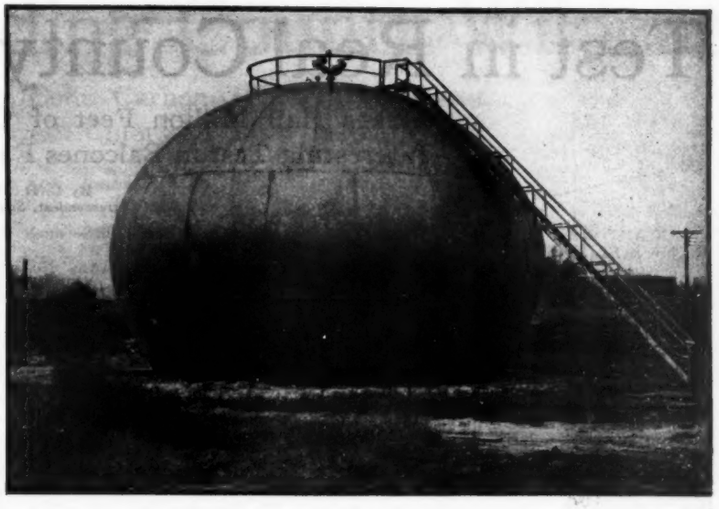
(Continued on Page 103)

GULF COAST FIELDS AND WILDCATS

Week Ended June 6
All Rotary

BARBERS HILL—CHAMBERS COUNTY

Gulf Production Co.'s No. 4 Wilburn (D.D.), Henry Griffith League, 1,400 ft. W line and 50 ft. S line of lease	Pulling screen and liner to deepen 5,239 ft.
Humphreys Corp.'s No. 5 E. H. Winfree, W. D. Smith Sur., 854 ft. from S line and 50 ft. from W line	Set screen 5,540 ft.
Humphreys Corp.'s No. 6 E. H. Winfree, W. D. Smith Sur., 50 ft. from N line and 50 ft. from W line of tract	Drlg. shale 3,599 ft.
Humphreys Corp.'s No. 1 Anna Davis, Henry Griffith League, 475 ft. from N line and 71 ft. from E line of Strip 6	Set 5 jts. 7-in. screen 5,323 ft.; comp. flowing 2,176 bbls. on 20-in. gauge, 580 lbs. pressure, 18/32-in. choke.
Humphreys Corp.'s No. 2 T. S. Fitzgerald, Henry Griffith League, 300 ft. from N line, 65 ft. from E line of tract	Drlg. shale and lime 4,346 ft.
Humphreys Corp.'s No. 1 Fitzgerald-Meadows, Henry Griffith League, 50 ft. S and 100 ft. E of NW cor. of tract	Drlg. salt 1,658 ft.; top salt 1,397 ft.
Mills Bennett Prod. Co.'s No. 1 Gulf-Fisher (workover), William Bloodgood Sur., 50 ft. from SW line and 350 ft. from SE line tract	Total depth 5,344 ft.; plugged to 4,635 ft.; milled out and sidetracked to oil sand 5,327-57 ft.; set screen.
Mills Bennett Prod. Co.'s No. 4 Gulf-Fisher, William Bloodgood Sur., 300 ft. from W line, 80 ft. from N line tract	Trying to fill cavity 1,317 ft.
Rio Bravo Oil Co.'s No. 2 Fisher, west flank	Coring hard sand 5,289 ft.
Sinclair Oil & Gas Co.'s No. 3 Smith, W. D. Smith Sur., 50 ft. out of S cor. of tract	Drlg. lime rock 3,806 ft.
Sun Oil Co.'s No. 2 Smith, W. D. Smith Sur., 75 ft. from W line, 50 ft. from N line of tract	Drlg. rock 4,452 ft.
Sun Oil Co.'s No. 3 Smith, W. D. Smith Sur., 50 ft. from S line, east offset Yount Lee Oil Co.'s No. 3 Winfree	Drlg. rock 4,350 ft.
Sun Oil Co.'s No. 2 Winfree, W. D. Smith Sur., 450 ft. SE along SW line from NW cor. of tract and 50 ft. NE at right angles	Drlg. rock 3,462 ft.
Sun Oil Co.'s No. 1 Anna Higgins, Wm. Bloodgood Sur., 230 ft. from E line and 31 ft. from S line 10-ac. tract	Drlg. rock 1,204 ft.
The Texas Company's No. 2 Winfree, west flank, W. D. Smith Sur., 264 ft. N, 50 ft. W at right angles out of SE cor. of lease	Set 146 ft. 6⅝-in. screen 5,622 ft.; comp. flowing 1,000 bbls. fluid, 10% oil.
The Texas Company's No. 3 Winfree, west flank, W. D. Smith Sur., 478 ft. N and 50 ft. W at right angles	Set 174 ft. 11-in. 6⅝-in. screen 5,630 ft.; comp. flowing 900 bbls. oil, 110 lbs. pressure, ⅝-in. choke.
The Texas Company's No. 4 Wilburn (D.D.), Henry Griffith League, approximately 1,700 ft. from W line and 50 ft. from S line of tract	Total depth 5,292 ft.; sidetracked 5,124 ft. and drlg. hard sand 5,130 ft.
The Texas Company's No. 6 Wilburn, Henry Griffith League, 250 ft. W of No. 4 and 50 ft. from S line of lease	Drlg. salt 1,828 ft.



A 10,000-barrel Hortonspheroid built for an oil refinery in Arkansas.

Holding high volatiles without loss with HORTONSPHEROIDS

THE Hortonspheroid offers economical and efficient protection for "wild" oil products which suffer excessive loss when stored in ordinary tanks. Liquids, such as Natural Gasoline, that boil at ordinary temperatures are held with minimum evaporation loss in this scientifically designed pressure tank.

Hortonspheroids are built to withstand an internal pressure of 10 or 15 lbs., which tests have shown is sufficient to prevent practically all evaporation loss over a wide range of volatility and temperature. No breathing losses can take place from products in standing storage unless the vapor pressure exceeds that for which the relief valve is set.

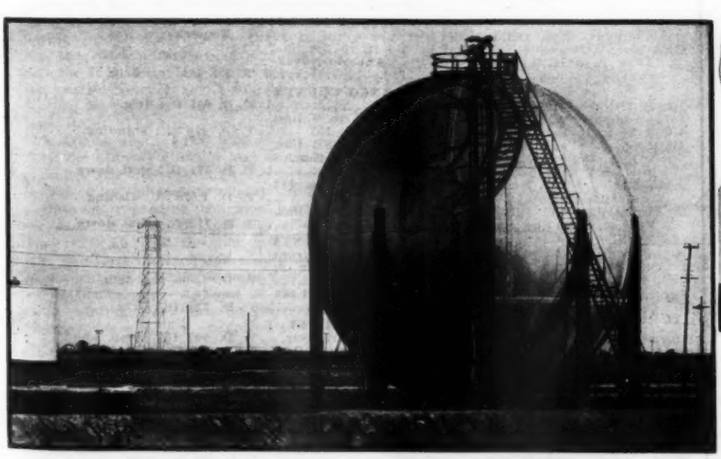
Filling and emptying losses are also greatly reduced, after the first filling. Thereafter, the vapor space is kept filled by evaporation from the liquid as the contents are withdrawn, and in filling, vapor condenses to keep the vapor pressure constant. This assumes ideal conditions, but for some liquids is true over a fairly wide temperature range.

The following table gives the standard Hortonspheroid capacities and sizes:

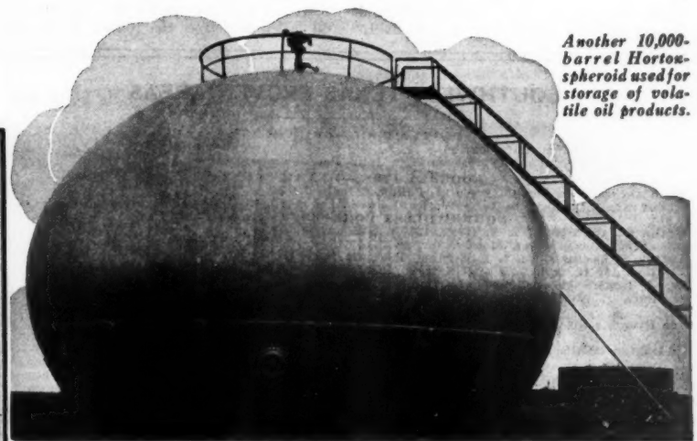
Capacity in Bbls.	Pressure in lbs.	Maximum diameter	Maximum Height
2,500	15	32' 7"	25' 3"
5,000	15	41' 7"	32' 6"
10,000	10	53' 0"	39' 5"
10,000	15	53' 0"	39' 5"
20,000	10	66' 8"	48' 0"
20,000	15	66' 8"	48' 0"

For economical storage of the more highly volatile oil products, the Hortonsphere, designed for a pressure of 25 lbs. and over, is provided. This high pressure tank reduces breathing and filling losses, and is available in capacities of 5,000, 7,500 and 10,000 bbls. A typical installation is shown at the lower left.

Our nearest office will be glad to send you evaporation data on pressure storage containers and furnish quotations on installations to meet your requirements.



Hortonsphere built for a working pressure of 25 lbs. and having a capacity of 10,000 barrels.



Another 10,000-barrel Hortonspheroid used for storage of volatile oil products.

CHICAGO BRIDGE & IRON WORKS

Dallas	1241 Burt Bldg.	New York	3147 Hudson Terminal Bldg.
Houston	1119 Electric Bldg.	Philadelphia	2615-1616 Walnut St. Bldg.
Tulsa	2406 Exchange Bank Bldg.	Los Angeles	1323 Subway Terminal Bldg.
Birmingham	1536 Fiftieth St., N.	Boston	1517 Consolidated Gas Bldg.
Chicago	2128 Old Colony Bldg.	San Francisco	1054 Rialto Bldg.
Detroit	1514 Lafayette Bldg.	Seattle	4323 Smith Tower
Cleveland	2204 Midland Bank Bldg.	Havana, Cuba	Apartado 2507

HORTON PRESSURE STORAGE

OGJ 6-11 Gray

Test in Real County May Be Important

Makes Half Million Feet of Gas With Strong Odor of Oil. Interesting Test in Balcones Fault Zone, Guadalupe County

By B. D. Stevenson
Staff Correspondent, Southwest Texas Fields

SAN ANTONIO, Tex., June 8.—Gant, Kilgore & Evans' No. 1 A. D. Auld in Real County with total depth 4,007 feet was 217 feet in sand with 500,000 feet of gas and a strong odor of oil. The importance, especially to that area, is greater than the showing might indicate. No. 1 J. M. Auld, 6 miles north and a little west, has 70 feet of dry sand at 4,185 feet and this was considered very important at the time. It was running low as to elevation and it was thought a location on structure with that much sand and in the Pennsylvania would make a big well. Top of the sand in No. 1 J. M. Auld is 1,912 feet and No. 1 A. D. Auld is 1,646 feet. No. 1 A. D. Aud is about 4 miles south and a little west of No. 1 Love in Kerr County which at 3,931 feet has been pumping about 200 bbls. of which 6 or 7 bbls. is oil and the rest salt water.

These three tests are the only ones ever drilled in that part of the country and hence there is no information disclosed by logs other than from these three tests, except that No. 1 Haby, 6 miles southeast of No. 1 A. D. Aud, is now down about 1,800 feet, and No. 1 Seiker-Mears, 3 miles northeast of No. 1 Love, is down below 2,000 feet. No. 1 A. D. Auld is bottomed in Pennsylvanian and operators seem to think that if there is a member in that horizon with 217 feet of sand with a little gas and oil maybe it can be found somewhere else with a big saturation.

Above Balcones Fault

With the exception of two tests in Kendall County which have been making a little hole everything on the north side of the Balcones fault has been standing still. Dixon Oil Co.'s No. 1 Behr is down 2,630 feet but has been making a little additional hole each week and Hardy Sitton's No. 1 Garvin now at 1,480 feet has been drilling a little most of the time.

In Blanco County Adams & Lyles' No. 1 Ludders has made a new deal. Total depth is 970 feet. Hardy Sitton has become interested and purchased the rig. The old leases have been cancelled and new leases taken and it is understood the test will be drilling again soon.

Below the Balcones Fault

W. J. Walton's No. 1 Zoboroski in Guadalupe County, 6 miles southeast of Seguin and the same distance southwest of the Darst Creek Pool, during the week picked up quite a lot of gas at 940-50 feet. It was the most interesting occurrence in the Balcones fault zone. The well is in the territory where a number of wildcat efforts drilled in the past few years have added accumulative evidence that there is a fault line in that part of the county but without thus far adding anything to the production columns though a number of tests have had some minor showings. The gas in the Walton test looked at first as though it was sufficient to make a test but later it was decided to deepen. It may at least indicate it is on structure. The fault line is supposed to run parallel to the Darst Creek line rather than being an extension of it. Walton's No. 1 Zoboroski was spudded in with the idea of going to the Edwards lime which should be reached not before around 2,650 feet. Adams & Lyles' No. 1 Zoboroski topped the Edwards at 2,662 feet and it is in the same territory and with an elevation of 476 feet. Adams & Lyles' No. 1 Nitche topped the Edwards at 2,656 feet.

Penn Oil Co. and Sun Oil Co.'s No. 1 Pollok in eastern Bexar County is not yet a well. The cement failed to hold and the casing has to be reset. Total depth is now 1,420 feet with casing set at 1,378 feet. This is in the Taylor marl and in the same horizon as No. 1 Cooksey, discovery well in that pool and No. 1 Pollok will be the third producer if it makes a producer.

In Caldwell County Ogden's No. 1 Alexander which last week was reported 8 feet in Edwards and with a showing of oil failed to deliver the goods. It showed a little oil with sulphur water when tested first but was only 8 feet in. It may be deepened but did not look so encouraging. It is in the area southwest of the Dale Field in eastern Caldwell, and Mills' No. 1 McMahon, 1 mile southwest of it, is down 2,437 feet and drilling. Total depth of Ogden's No. 1 Alexander was 2,338 feet.

Luling District

One other test in the Luling district was down to the Edwards and a verdict on it may be available in a few days. It is Rayor's No. 1 Dunlap, northwest of the town of Luling and between the town and the Luling Field. At 2,515 feet it was 4 feet in Edwards and with a little showing of oil and was setting casing.

West of San Antonio in the Balcones fault zone there are only a few tests and not much headway being made. Lloyd North is starting No. 1 Mrs. Clay West Burns in northern Zavala County about 3 miles north of the West gas field where shallow gas in considerable volume is being used to feed the lines of the Texas Gas Utilities Co. He will drill to around 1,200 feet for the shallow gas. If he fails to get production it is understood the hole may be carried down by other interests for a deep hole.

Harry Bruner's No. 1 Jim Sherrill in northern Guadalupe has casing on the ground. It is a shallow test and should be in the sand this week.

The disappointment of the week in the Balcones fault zone was Camp's No. 1 Chevas, 10 miles south of San Antonio, on a Humble Oil & Refining Co. block of leases and drilled on its geology. At 2,633 feet it was 50 feet in the Edwards lime and got sulphur water and has been abandoned. The contract with Camp calls for two tests on the block and the location for the other will be made at once. The block consists of about 7,500 acres lying west from Elmendorff.

Pettus Area

In the Pettus area Mauldin's No. 1 fee at the southwest corner of the townsite, which has been standing for a long time, now has casing set and should be ready to bring in within a few days. It had a good showing at about the right depth. J. M. Davis has made considerable hole a half mile farther west but has considerable drilling to do before getting to the pay sand and the United Production Co.'s No. 37 Ray off to the southwest is down below 3,000 feet and may be in the pay by the end of this week if there is any pay there.

One new test is to be started. George N. Moore, Henry Zweifel and Cosden Oil Co. are starting No. 2 Freeland in the Cosden Pool a mile west of the Pettus Pool.

Corpus Christi District

The week's operations in the Corpus Christi district developed a salt water well in Saxet Oil Co.'s No. 8 Dunn in the Saxet Field at 4,277 feet. It is presumably too far north. Two producers at about that depth are located south of it, the nearest being 1,000 feet south. It has been abandoned.

Two other tests added a lot of depth and are after new deep sands. Houston Oil Co.'s No. 2 Rand Morgan which made a small well in the sand at 4,095 feet is reported at 4,818 feet and 8 feet in sand and fixing to test, and L. L. Smith's No. 1 Hunter was drilling at 4,890 feet. It is a half mile north and a little west of No. 2 Rand Morgan of the Houston Oil Co. The deepest production in the Saxet area is the Saxet Oil Co.'s Nos. 6 and 7 Dunn at about 4,300 feet, the only two wells at that depth.

Before the close of this week a verdict will be reached in the Gulf Coast Oil Co.'s No. 1 Harrell a half mile northwest of Smith's No. 1 Hunter. It is testing a sand at 4,095 feet after setting casing. If a producer it will make the field for that sand a mile wide.

Practically all the drilling in the Corpus Christi area at this time seems to be in efforts to find deep production. Saxet Oil Co.'s No. 4 White Point Development Co., in the center of the White Point Field in San Patricio County, reached a total depth of 5,712 feet but last reports were it was perforating casing at 3,300 feet.

SOUTHWEST TEXAS PROVEN AREAS

PETTUS POOL—BEE COUNTY

Company, farm and location— Remarks:
Geo. N. Moore et al's No. 2 Freeland in John Pace Sur... Location.

COOKSEY POOL—BEXAR COUNTY

Penn Oil Co.-Sun Oil Co.'s No. 1 Pollok, 1,100 ft. SW of No. 1 Cooksey in John W. Raill Sur. ..... T. D. 1,420 ft.; reset csg.

DOBROWOLSKI POOL—BEXAR COUNTY

Gatlin Oil Co.'s No. 7 I. A. Beck, 150 ft. SW line, 1,351 ft. SE line of tract, Montez Sur. ..... Rigging up
Patton & Yocum's No. 1 T. Strunk, 1,351 ft. from SE line, 150 ft. from NE line of tract ..... T. D. 727 ft.; installing pump.
W. S. Rogers et al's No. 1 L. Donnop, Juan Montez Sur. ..... T. D. 612 ft.; shut down.

BRUNER POOL—CALDWELL COUNTY

Joe Bruner's No. 1 Malone, A. Floyd Sur. ..... T. D. 218 ft.; drlg.

EDDINGTON POOL—FALLS COUNTY

Eddington et al's No. 3 Llewellyn, George Allen Sur. .... T. D. 1,070 ft.; fishing.

DARST CREEK FIELD—GUADALUPE COUNTY

Magnolia Pet. Co.'s No. 3 M. T. Klein, 300 ft. SE of No. 1 ..... T. D. 1,600 ft.; drlg.

CHAPMAN POOL—WILLIAMSON COUNTY

Chapman et al's No. 2 Lawrence, S. Miller Sur. ..... T. D. 1,916 ft.; set 6⅝-in. csg.; waiting on cement.
Vitex Oil Co.'s No. 8 Kilgore, Simon Miller Sur. ..... T. D. 1,735 ft.; waiting on cement.

PETTUS AREA—BEE COUNTY

J. M. Davis et al's No. 1 Ray, 330 ft. from N and E lines of John W. Williamson Sur. ..... T. D. 2,852 ft.; drlg.
J. L. Mauldin's No. 1 fee, 1,300 ft. N of S line, 150 ft. E of Medio Creek, Kerr Sur. ..... T. D. 3,862 ft.; set csg.; waiting on cement.
United Prod. Co.'s No. 37 Ray, 3,200 ft. from SW line, 996 ft. from SE line of Willis A. Moore Sur. ..... T. D. 2,922 ft.; drlg.

CARTWRIGHT POOL—LIVE OAK COUNTY

Houston Oil Co.'s No. 23 Cartwright, 691 ft. N, 30° E of No. 11 ..... T. D. 3,675 ft.; drlg.

CHITTIM POOL—MAVERICK COUNTY

Texas Gas Utilities' No. 8 Chittim, 24 ft. S of No. 7 Chittim ..... T. D. 2,258 ft.; drlg.

SAXET FIELD—NUECES COUNTY

Gulf Coast Oil Co.'s No. 1-Maggie Harrall, 330 ft. from S and W lines of Blk. 32, Sec. 311 ..... T. D. 4,095 ft.; drlg. plug.
Houston Oil Co.'s (Andy Bowen) No. 1 Prieur, H. B. Sheppard Sur. ..... T. D. 1,465 ft.; waiting for csg.
Houston Oil Co.'s No. 1 Lawrence ..... T. D. 2,740 ft.; running wild.

(Continued on Page 97)

WILDCAT OPERATIONS IN SOUTHWEST TEXAS

ATASCOSA COUNTY

Company, farm and location— Remarks:
Glen Mathis, trustee's No. 1 Martin, 150 ft. to NE line, 2,640 ft. to SE line of tract in Jose Antonio Navarro Sur. ..... T. D. 500 ft.; drlg.

BLANCO COUNTY

Hardy-Sitton's No. 1 McMillan ..... T. D. 696 ft.; drlg.
Liles-Adams et al's No. 1 Stanford, 150 ft. to S line, 1,120 ft. to E line of James Stanford's No. 155 ..... T. D. 970 ft.; standing.
McCleary et al's No. 1 Schenling, 900 ft. to SE line, 600 ft. to S line of J. A. Rouse No. 118 Sur., 4 miles SW from Blanco City ..... T. D. 574 ft.; shut down.
J. R. Meek's No. 1 Walker, 360 rds. from W line, 482 rds. from S line of 375-ac. tract in Sur. No. 32 ..... T. D. 1,078 ft.; fishing.
C. Rosenfield's No. 1 Hohenberger, 800 ft. to W line, 1,250 ft. to N line, Sur. No. 94 ..... T. D. 712 ft.; shut down.

BASTROP COUNTY

Schimmel & Batts' No. 1 J. E. Ferguson, 160 ft. from NW line, 1,600 ft. from NE line of tract in J. Doyle Sur. ..... T. D. 1,000 ft.; drlg.
Smith & Barnes' No. 1 Marberger, 450 ft. W line, 1,360 ft. S line of tract in King & Millet Sur. ..... T. D. 227 ft.; drlg.

BELL COUNTY

Hartman et al's No. 1 M. E. Reed, Nancy Roberts Sur. .. T. D. 907 ft.; temp. abnd.
Mildon Oil Co.'s No. 1 J. K. Edds, Maxiano Moreno Sur... T. D. 519 ft.; drlg. shale.
C. O. Alford's No. 1 A. L. Keifer, 150 ft. from S and W lines of tract in Woodford Sur. ..... Location.
Vilas Oil Co.'s No. 1 B. F. Whittington, 9 miles E of Holland ..... Moving in rig.

BROOKS COUNTY

O. C. Woods' No. 1 J. G. Ramos, 959 ft. to E line, 783 ft. to S line of Tract 10, Blk. 3, Amos Dinn Subd., La Lestena grant ..... T. D. 200 ft.; drlg.
Ike Howeth's No. 1 Singer, 400 ft. E of Humble's No. 1 Singer ..... T. D. 1,156 ft.; drlg.
The Texas Company's No. 1 Allen, San Antonita grant .. T. D. 1,410 ft.; drlg.

BEE COUNTY

Alexander et al's No. 1 McFall, 3 miles S Skidmore .... T. D. 1,312 ft.; drlg.
Grebin & Woods' No. 1 Riggs, 4,800 ft. to E line, 200 ft. to N line of James Nowland Sur., 6 miles W of Skidmore ..... T. D. 75 ft.; drlg.
Mauldin et al's No. 1 Kimball, 300 ft. S Grayburg's No. 1-A Kimball, S. Winship Sur. ..... T. D. 3,544 ft.; standing.

(Continued on Page 97)

Third Flow in Harding County Wildcat

Gas in New Mexico Test 98 Per Cent Carbon Dioxide. Midwest Blocks New Area in Northeastern Colorado. Show in Utah Test

By Tolbert R. Ingram
Staff Correspondent, Rocky Mountain Area

DENVER, Colo., June 8.—Conference of operators and state officials of New Mexico to discuss proration in the Hobbs Pool was postponed on account of the East Texas situation. Commissioner Hinkle, of the state land office, has amplified his statement regarding state leases under the new law to clear up misunderstandings. Leonard & Levers' No. 1 Justis, in the Jal area, appears to be drilling itself in as a gasser. The Harding County wildcat which is attracting considerable attention, has a third gas flow at 973 feet.

The Midwest Refining Co. has taken a block of leases in a new area in northeastern Colorado and may drill next fall. The Argo Oil Co. has abandoned its High Line test in Mesa County.

The Phillips Petroleum Co. test on Middle Creek in Niobrara County, Wyoming, was abandoned.

The Department of the Interior will offer at auction on June 29 leases on 1,434 acres in the Kevin-Sunburst Field in Montana. One completion, a 15-bbl. well, was reported in the Kevin-Sunburst Field.

The Utah Southern Oil Co. had a good show of live oil in its Utah test.

NEW MEXICO

A meeting of operators in the Hobbs Pool with state officials of New Mexico to consider the proration agreement in effect in that field, scheduled to be held at Santa Fe this week, was postponed. Last January the operators and the commissioner of the general land office and the state geologist reached an agreement to extend the Hobbs proration agreement another six months. Subsequently Governor Seligman called a conference of the oil men at which he sought to have incorporated into the agreement a paragraph establishing a minimum outlet for the Hobbs Pool and at which he endeavored to have the quantity of oil being marketed increased from 32,500 bbls. daily, the amount named in the extension agreement. After canvassing conditions at the time, no change was made. The matter is due for consideration at this time, but on account of the unsettled situation in the East Texas Field requiring the close attention of the oil men and the fact that East Texas has a bearing on the New Mexico situation, it was decided to postpone the meeting until a later date. The pipe line companies are now taking about 4,000 bbls. a day more than the allowable outlet last January.

James Hinkle, state land commissioner, issued a supplementary statement the past week regarding the new lease law on state land which goes into effect on June 12. He said the new law required just one form of lease and a definite date of expiration and that it validates all existing leases and contracts of the State. Any existing lease can be converted to the new lease for its unexpired term, but not at less rental than provided for in the old lease and, if it carries a preference right, an additional five years at double the rental for the additional five years. Leases in the restricted districts are sold by advertisement and under the same condition as heretofore, except that the preference right is out and in lieu thereof, if oil or gas is not discovered during the primary period, an additional five years is granted at double the rental.

Lea County

Leonard & Levers' No. 1 Justis, C SE NE, Section 19-25-37, two-thirds of a mile east of the Continental Oil Co.'s No. 1 Sholes, in the Jal area, appears to be drilling itself in. Two weeks ago it had a show of oil at 2,705-13 feet, followed by a show of gas at 2,743-48 feet. The gas increased at 2,755 feet to about 3,000,000 feet and at 2,758 feet the tools were lost. The past week the gas blew the tools out of the hole and damaged the rig. It is shut down while repairs are being made and the gas has increased to around 6,000,000 feet. Culberson & Conrad's No. 1 State, C NE, Section 22-18-34, Caprock area, cemented 10-inch at 1,724 feet in the red beds and is shut down to rig up cable tools. Western Drilling Co.'s No. 1 State, SE NE NE, Section 16-20-32, northwest of Lea Pool, is drilling at 1,265 feet in anhydrite. Midwest Refining Co.'s No. 26 Capps, C SE SW, Section 3-19-38, Hobbs Pool, cemented 8⅝-inch at 4,028 feet. It topped the sand at 3,980 feet and will shortly be a completion.

Eddy County

J. O. Hammond & Sons' No. 1 Gillette, C NW NW, Section 34-18-26, is shut down at 1,060 feet in lime.

Harding County

Kumbaca Oil Co.'s No. 1 Kerline, NW cor. SE, Section 34-21-30, Bueyeros district, which recently encountered the third flow of gas, is shut down for orders at 973 feet. The last gas was encountered at 940-73 feet and gauged 3,654,000 feet. It is 98 per cent carbon dioxide. The first gas was at 285-87 feet and the second at 825 feet. The hole is cased with 200 feet of 20-inch; 445 feet of 15½-inch; 836 feet of 12½-inch; and 920 feet of 10-inch.

Mora County

Fulton Petroleum Co.'s No. 1 Santa Fe-Dioice Co., NE cor., Section 14-19-21, Wagonmound district, is drilling at 1,300 feet. Its objective is a sand yielding carbon dioxide gas.

Guadalupe County

New Mexico Producing & Refining Co.'s No. 1 McMullen, SW cor., Section 24-5n-16, Mesa Leon district, is shut down at 305 feet in lime and fighting a cave.

De Baca County

Matador Oil Co.'s No. 1 Wood, NE SW SW, Section 6-4n-20, Salada Creek, is drilling at 3,171 feet in the red beds.

San Juan County

Continental Oil Co.'s No. 24, SW cor. NW, Section 1-29-19, Rattlesnake Dome, is bottomed at 4,730 feet and mixing mud and reconditioning hole at 3,690 feet. R. C. Oswell's No. 2 Permit, NW, Section 34-30-11w, near Aztec, is drilling at 412 feet.

Rio Arriba County

Governardo Oil Co.'s No. 1, SE, Section 15-29-7w, is drilling at 1,010 feet.

COLORADO

Weld County

Reiter-Foster Oil Co.'s No. 1 Ida Johnson, C NE NW, Section 24-6n-61, Greasewood Dome, is shut down at 4,330 feet for boiler repairs.

A new area appeared this week when the Midwest Refining Co. closed leases on 10½ sections of the Beebe Draw district, 8 to 10 miles southeast of Greeley. The owners pooled their acreage under a community plan in which all will share equally in royalties. The block embraces approximately 6,720 acres and extends about 5 miles in a north-south trend and about 2 miles wide. Evidences of a small high have been worked out by the geological department and a magnetometer will be used to check this and determine as far as possible whether it is a structural high at depth or merely a surface rise. The tract runs east and south from the southeastern corner of the Latham reservoir. Some few months ago the Continental Oil Co. had a force of men at work to the south of this area and to the north of Hudson and did considerable core drilling.

Morgan County

Several car loads of rotary equipment for the Indian Territory Illuminating Oil Co.'s No. 1 State, C NE NE, Section 16-1n-57, Fort Morgan anticline, arrived at Orchard the past week and the material is being trucked to its well. The hole has been standing for some time at a total depth of 4,090 feet where it was held up by bad ground and inability to land 6⅝-inch on bottom. The same trouble was encountered earlier in the drilling with 8¼-inch which froze at 3,650 feet and finally was cemented at that depth. When the rotary is installed drilling will be resumed with a 7⅞-inch bit.

Arapahoe County

MacDeb Drilling Co.'s No. 1 Fitzsimmons, NE, Section 7-4s-66, near Aurora, is standing at a total depth of 5,835 feet waiting for casing. It has a small show of oil at this depth. J. W. Merritt and others' No. 1 Union Pacific, SE cor. NW, Section 17-5s-64, Watkins district, is shut down for orders at 1,600 feet.

Adams County

Nettie M. Slatt's No. 1 Hills, SE cor., Section 27-3s-64, Watkins district, is drilling at 3,595 feet in very hard limestone with a show of gas and a little grease on the bit.

Washington County

Fred R. Zimmerman and others' No. 1 Middlesmist, SE SW SE, Section 14-4s-56, is shut down at 1,510 feet.

Jefferson County

Ruby Hill Oil & Gas Co.'s No. 1 Braden, SE cor., Section 24-4s-69, near Denver, is drilling at 3,918 feet.

Larimer County

Vogel-Raddatz Corp.'s No. 1 School House, NE cor., Section 20-4n-69, Berthoud Dome, joint with the Standard Oil Co. of Colorado, is spudding. Same company's No. 2 State, C NW, Section 16-4-69, has steel derrick up waiting for rig from Texas. Stanley M. Barrows' No. 1 Munroe, C NW NE, Section 26-11n-69, Round Butte, is shut down at 1,050 feet.

Baca County

A. R. Jones Oil & Operating Co.'s No. 1 Boice Cattle, NW NE, Section 23-34-42, Mile Camp Dome, is bottomed at 4,965 feet and sidetracking 400 feet of 4¾-inch pipe. It topped the Mississippian at 4,830 feet. It was decided to go deeper in this test after the pulling of casing to abandon had begun.

Montezuma County

Fred C. Haller's No. 1 Stephens, Section 33-36-14w, Point Lookout, is drilling at 175 feet.

Huerfano County

Alamo Oil Co.'s No. 1 fee, Section 4-28-68, is shut down at 4,115 feet waiting on negotiations for rotary rig to start new hole from the top.

Mesa County

Argo Oil Co.'s No. 1 Hoel, NE cor., Section 23-8s-104, High Line Dome, is being abandoned. This test was started in 1927 and was drilled by several different companies to 3,000 feet and tested the Dakota at 2,800-40 feet which had a good show of gas. The hole was in bad condition and the Argo company after taking it over, did considerable work on it in an effort to drill on down to the Sundance and was shut down last fall. Leases have been turned back.

Moffat County

Keoughan and Myers' No. 1 State, SW SW, Section 16-4n-101, Skull Creek, is shut down at 2,950 feet.

Rio Blanco County

Magnolia Petroleum Co.'s No. 1 Maddock, C NW SE, Section 9-2s-96, Piceance Creek, is about ready to begin spudding.

Park County

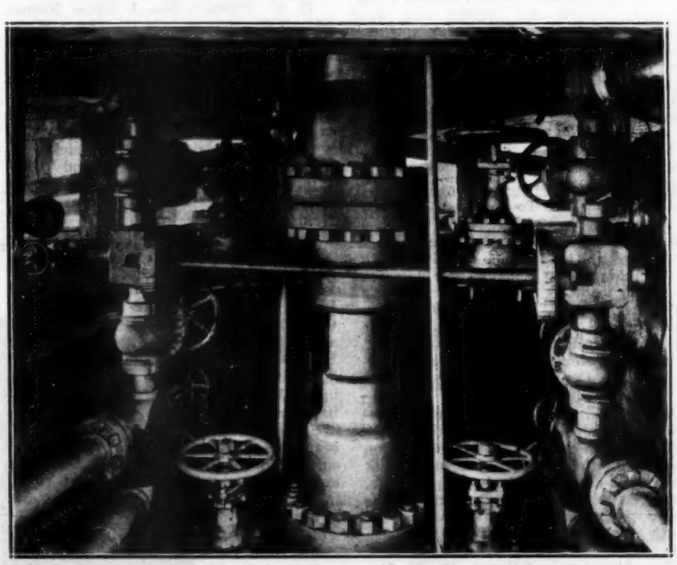
South Park Oil & Gas Co.'s No. 1 Esche, SE cor. NW, Section 5-9s-76, Muleshoe district, is bottomed at 2,360 feet and preparing to run 8¼-inch. It cut an unidentified sand at 2,345-60 feet which showed a small but steady flow of gas through water. The water stood 1,500 feet in the hole over night. South Park Oil Co.'s No. 1 Milligan, NE SE, Section 13-8s-76, Jefferson district, cemented 8¼-inch at 2,015 feet to shut off water that broke in behind that string. It showed about 1 gallon of oil on the bailer. Drillers for both companies claim they are in or near the top of the Dakota formation, but this is not confirmed by others familiar with the area.

WYOMING

Fremont County

The Big Sand Draw test of the Producers & Refiners Corp. in its No. 10, NE NW SW, Section 14-32-95, the first hole to explore the horizons below the

HEAVY CONNECTIONS AT KETTLEMAN HILLS



Cellar connections on well of Standard Oil Co. of California at Kettleman Hills.

big gas in the Frontier formation after attempts at numerous intervals in the past 10 years to get through the heavy pressure, is nearing completion. It was drilled to a total depth of 5,345 feet and tested practically all sands in the Sundance formation. It is now standing with 8¼-inch at 5,169 feet at which depth it was cemented. It will be saved as a gas well in the upper horizons. Same company's No. 2, NW SE NW, Section 33-34-92, Muskrat Dome, is bottomed at 5,573 feet with 10-inch cemented at 4,906 feet and is bailing mud to test. This is the second deep well drilled by the company on this dome and it went much deeper than the discovery well on the NW SE SE, Section 34-34-92, which came in in 1928 at 4,340 feet for 75,000,000 feet of gas in the Frontier.

Park County

Resolute Oil Co.'s No. 1, NE SW NE, Section 17-57-101, Badger Basin, is reported drilling at 8,545 feet in the second Frontier with the formation softening up somewhat. No estimate on what the well is making has been given out by the company. Scout reports credit it with about 75 bbls. per day while drilling is in progress.

Midwest Refining Co.'s No. 24 Rosenberg, NE SE NE, Section 26-58-98, Frannie Dome, is spudding at 75 feet in blue shale. Grebo Royalties, Inc.'s No. 1 McGrath, NE cor. SE, Section 2-47-100, Little Buffalo Basin, is waiting for cement to set. The 12½-inch was set at 836 feet.

Big Horn County

Utah Southern Oil Co.'s No. 3 Government, NE cor. SW, Section 29-56-97, Garland Dome, is drilling at 3,820 feet in the Madison lime. F. T. Griffith, trustee's No. 1, SE NE SE, Section 29-56-97, is drilling at 3,100 feet, and Ohio Oil Co.'s No. 1 Smith, NE SE SE, Section 33-56-97, is drilling at 1,705 feet.

Washakie County

Ohio Oil Co.'s No. 1 Strothers, SW SE NW, Section 19-45-92, Neiber Dome, is drilling at 5,055 feet. This is a 7,000-foot test. It spudded in March and is being drilled with rotary.

Weston County

Julius Peters, of Great Falls, Mont., president of the Resolute Oil Co., and Dr. Frederick A. Cook, of North Pole fame, are reported to have taken over No. 1 Witzell, SE cor. NW, Section 30-46-64, on the Fiddler Creek Dome and it is rigging to complete. It will be deepened from 1,600 feet to the Muddy, which is expected at around 3,300 feet. There is a chance for production in the Frontier at 2,000 feet. This operation was started in 1928 by the Teton Oil Co. and has changed owners several times. The Osage-Wyoming Oil Co. was the last to undertake the test. The surface is the Foxhills.

The Chadron-Osage Co. has taken over the Decker Oil Co.'s No. 1, NW NE NE, Section 1-45-64, and will clean up the casing trouble and attempt to complete it. It had an oil show at 2,124 feet, but developed water trouble.

Clark and others' No. 1, SE NE NE, Section 15-46-64, is running casing at 1,920 feet, and Tom Don's No. 2, NW cor. SE, Section 23-46-64, is drilling at 1,640 feet. Yellowstone Petroleum Co.'s No. 1, NE cor. NW, Section 23-46-64, is shut down at 400 feet. Wytex Oil Co.'s No. 5 Logan McCullough, SW NE NE, Section 23-46-64, is drilling at 960 feet and B. V. Hole and others' No. 1, SW SW, Section 9-46-63, is shut down at 330 feet.

Niobrara County

Phillips Petroleum Co.'s No. 1, SW cor. SE, Section 32-34-65, Middle Creek structure, a shallow test put down with core drill, is being abandoned at 750 feet in the Chugwater after showing saturation in several horizons. It is located to the south of the Lance Creek Field in which the Ohio Oil Co. found good production in the Sundance in the first and only test drilled to that horizon on that structure. The Dakota, from which production heretofore has come in Lance Creek, is at the surface at Middle Creek. The block was acquired by Robert G. Taylor and Shoup Brothers from A. A. Spaugh and a deal was made with the Phillips Petroleum Co. for a test. On account of the shallow depth it was decided to use a core drill. C. D. Johnson, of Petroleum Information, Inc., and Mr. Wolff, of the Phillips staff, made the location. The structure is cut by a fault and a traverse fault and it is believed, as indicated by results, that the traverse fault was drilled through and that the Chugwater was topped on the upthrow side. The top of the Chugwater was at 510 feet. This was much shallower than expected and appears to have been due to the absence of about 100 feet of the Sundance section, which section contained the producing horizon in Lance Creek. There was a good show of oil at 200-20 feet, a sand at 322-38 feet and a show of oil in hard gray lime at 390-410 feet. The intervening shales showed saturation. Another well will be spotted and further testing undertaken.

Indian Petroleum Co.'s No. 1, NE NW NE, Section 7-35-65, Lance Creek, which is being deepened to the Sundance at 4,200 feet, is drilling below 3,911 feet.

Converse County

Continental Oil Co.'s No. 50 Whiteside, NW SW SW, Section 9-33-76, Big Muddy, is shut down after rigging up rotary to deepen to the Lakota.

Natrona County

Midwest Refining Co.'s No. 11 Middy, C NE NE, Section 23-35-79, Midway Dome, has plugged back from 6,685 feet to 6,505 feet and is waiting for cement to set.

Laramie County

Prairie Oil & Gas Co.'s No. 1 Warren, SE NE SE, Section 22-13-68, southwest of Cheyenne, is spudding at 30 feet.

Sweetwater County

Mountain Fuel Supply Co.'s No. 1 Cappers, SW cor. NE, Section 2-19-104, North Baxter Basin, is testing at a total depth of 3,660 feet and bailing about one-half a barrel of oil, considerable water and a show of gas from the top of the Sundance.

Carbon County

Midwest Refining Co.'s No. 27 Union Pacific, NW SE SE, Section 11-20-81, Elk Mountain, is drilling at 2,600 feet in gray shale. Producers & Refiners' No. 1, SW cor., Section 19-20-83, Overland Dome, is drilling at 312 feet in sand and granite, and its No. 1, NE SE NE, Section 7-25-86, South Ferris, is running 6¼-inch at a total depth of 2,060 feet. The Lost Soldier Producing Co.'s No. 1, SE, Section 25-26-88, Mahoney Dome (Schupbach, Dane and others), is standing at 3,652 feet in the top of the Sundance with a very good show of oil and gas. Some estimates place the show at 200 bbls. per day. It was drilled to 3,515 feet several years ago by the Hughes Royalty Co. Subsequently a log of a well drilled by another company indicated that it had not entered the Sundance. The new interests took it over and are deepening it.

Uinta County

North American Oil Co.'s No. 2, SW SE, Section 22-15-118, Spring Valley, is drilling under new management after being idle for more than a year. Trans-Western Petroleum Co., Ltd.'s No. 1, C SE, Section 6-14-118, Aspen district, is drilling at 3,216 feet.

Sublet County

Piney-La Barge Oil Co.'s No. 1, Section 12-28-113, Dry Piney (Thomas B. Jefferson and others), is bottomed at 2,290 feet and fishing for bailer. Ogden-La Barge Oil Co.'s No. 1, Section 18-27-113, La Barge Field, is bottomed at 6,300 feet and fishing for 600 feet of pipe dropped several weeks ago.

MONTANA

The Department of the Interior will offer for sale at auction at Great Falls on June 29 at 10 o'clock a.m., leases on 1,434 acres of government land in the Kevin-Sunburst Field under the provisions of Section 17 of the general leasing act. The land will be offered in four units as follows:

Unit No. 1—W half NE N half SW NW NE, Section 19-35-2w, 194.68 acres; Unit No. 2—S half SE, Section 19, NW NW, Section 29, and E half E half and NW NE, Section 30-35-2w, 320 acres; Unit No. 3—S half, Section 10, W half SW, Section 11 and N half N half, Section 15-35-3w, 560 acres; Unit No. 4—S half N half N half S half and SE SE, Section 15-35-3w, 360 acres.

Toole County

Diamond Oil Co.'s No. 17 McCormick, CNL SE NW, Section 33-35-2w, Kevin-Sunburst Field, is estimated at 15 bbls. daily after being shot with 20 quarts in the Ellis-Madison contact at 1,477 feet. This company's No. 18 McCormick, CNL NW NW, Section 33, a south offset to the Texas Production Co.'s Moe lease, is spudding. Liquid Gold Oil Co.'s No. 1 Bucher, C SW NE, Section 25-36-1e, Barthelote district, has material on the ground. Landshire Oils, Ltd.'s No. 1 Farbo, SE cor. SW, Section 10-37-3w, Border Field, is an abandoned location.

Glacier County

Fulton Petroleum Co.'s No. 1 Blackfeet, SW NE NE, Section 28-36-12w, Milk River district, is drilling at 1,790 feet. L. B. O'Neill, trustee's No. 1 State, C SW NW, Section 34-26-5w, Cut Bank area, is spudding at 100 feet, and his No. 1 State, C NW NW, Section 33-36-5w, is spudding. Same operator's No. 1 Schneider, C NE SE, Section 32-36-5, had water at 3,540 feet, and his No. 1 Taylor & Spikes, C SW SW, Section 35-36-5w, set 20-inch at 140 feet. B. & H. Oil Co.'s No. 1 Yunck, NE SE SW, Section 23-34-6w, shut down after spudding.

Carbon County

Ohio Oil Co.'s No. 1 Montana Industrial, SE SW NE, Section 11-7s-21, Dry Creek, is drilling at 5,453 feet in rusty beds near the top of the Dakota, and its No. 1 Souders, C SW SE, Section 2-7-21, is drilling at 3,480 feet. Same company's No. 1 Chapman, C SW SW, Section 2-7s-21, which completed rig last January, has commenced drilling and is making hole at 300 feet. Carbon Oil & Gas Co.'s No. 1 Armstrong, SW cor. NW, Section 7-7s-22, cemented the 13⅜-inch at 2,326 feet and is rigging up rotary.

Golden Valley County

Texas Pacific Coal & Oil Co.'s No. 1 Northern Pacific, SW cor., Section 21-8n-21, Woman's Pocket, is shut down at 4,000 feet with water trouble.

Rosebud County

Prairie Oil & Gas Co.'s No. 1-X, Contract 3, NE SW NW, Section 26-10-39, Porcupine Dome, has drilled by tools at 1,944 feet and is drilling out cement. Total depth is 2,415 feet where it had the big flow of water that heretofore has hindered the testing of deeper horizons. Same company's No. 1, Contract 4, SE SW SW, Section 28-11-34w, which has been standing at 1,360 feet, is rigging up and cleaning out to resume.

Choteau County

Coolidge & Coolidge's No. 2 Lehfelt, SW SE NE, Section 32-26-17e, Sherrard

(Continued on Page 90)

NEW MARSHALL GAS PRODUCER ADDS TO MT. PLEASANT SUPPLY

By Paul A. Elliott

MUSKEGON, Mich., June 8.—In accord with the hopes of the Gas Corp. of Michigan, whose proposed franchise to distribute natural gas in the city of Mount Pleasant, was approved last week by the voters, a good sized new Marshall gas well was completed this week on the Catherine Hodson and others lease in Vernon Township, Isabella County, by the Chartiers Oil Co. The Gas corporation was depending on several wells previously completed with a comparatively large open flow of gas for its supply with which to serve the consumers of Mount Pleasant. The new well increases the company's faith in the territory and adds to the available supply of natural gas.

The well, which is the Chartiers company's No. 1 Hodson, SE SW, Section 36-16n-4w, Vernon Township, was gauged at 3,700,000 feet daily open flow at a total depth of 1,300 feet. At this depth the Marshall gas sands had been penetrated less than 5 feet and the well is one of the largest in the township.

The Gordon Oil Co.'s No. 1 Noah J. Skinner, SW SE, Section 9-14n-2w, Greendale Township, Midland County, about a half mile west and slightly north of the Kalamazoo Improvement Co.'s No. 1 George Hornick which considerably extended the original Mount Pleasant Field recently, struck the Dundee high this week and indicated a large initial flow.

Dundee was topped at 3,500 feet and pay sands were struck at 3,530-35 feet when the well filled up 2,500 feet within an hour. It will be drilled a little deeper.

George Talbot's No. 1 Ellen Wiley, NW NE, Section 22-16n-4w, Vernon Township, Isabella County, was abandoned at 3,781 feet.

Clare Township

Oil drilling activities will be resumed immediately in the natural gas field northwest of the village of Clare with the announcement that a new location has been made by James A. McKay and John A. Mercier. It will be drilled on the James S. Bicknell farm and will be known as McKay and Mercier's No. 7-A, NE SW, Section 6-17n-4w, Grant Township, Clare County.

Wildcat Activities

Three new permits indicate a continuing interest in widely scattered wildcat areas in Michigan. One is in Huron County on the extreme eastern edge of the Thumb district of the lower peninsula, another in north central part of the lower peninsula and the third in the south central part near the Ohio State line.

The three are as follows: Pacific Exploration Co.'s No. 1 William Ballagh, NE NW NW Section 32-15n-12e, Sheridan Township, Huron County; Grayling Development Co.'s No. 3 State of Michigan, SW SE Section 2-17n-9w, Hersey Township, Osceola County; and D. O. H. I. Oil Corp.'s No. 1 William Farrow, SE NE Section 13-8s-5e, Riga Township, Lenawee County.

Western Michigan Wildcats

Operators in western Michigan are anticipating at least a small oil well in G. C. Irvine's No. 1 City of Allegan, in Pingree Park within the city limits, Section 28-2n-13w, Allegan Township, Allegan County, which is about ready to be drilled into the upper Traverse formation.

J. A. and E. G. Thompson, who operate as Thompson Brothers, have reached more than 3,000 feet on the old Taggart & Welch No. 4 on the Campbell and Barnett property where they are expecting to strike Sylvania gas sands at about 3,400 to 3,500 feet. The well is in Logan Township, Mason County.

Oceana and Newaygo Counties, located north and northeast of Muskegon County, each have one drilling wildcat.

Two most recent wildcats started in Muskegon County in an effort to locate a new western Michigan oil pool are dry to the Dundee formation.

H. C. Nelson's No. 1 Arvid Nelson, SE NW Section 24-12n-18w, White River Township, Muskegon County, is being plugged and abandoned as a "duster" at about 2,300 feet. It is a short distance west of several other unsuccessful wells near the village of Montague.

H. and W. Feicke's No. 1 Feicke, SE SW Section 1-11n-17w, Fruitland Township, Muskegon County, was shot in the Dundee at 2,305 feet without successful results. It has not been decided whether it will be drilled deeper.

Several old wells in the proved Muskegon Field are being abandoned: United Petroleum Co.'s No. 1 and No. 2 Albert Peters, NE SE Section 12-10n-17w, Laketon Township, on the Bear Lake flats, and Van Buren Development Co.'s No. 1 Hubbel-Bascom-Leahy, SE SW Section 3-10n-16w, Muskegon Township, on the upper Muskegon River flats. These originally were Dundee oil producers.

Several other old producers also have been plugged and abandoned recently resulting in a slight increase in both oil and gas production from wells on adjoining leases. Gas flow has been doubled in some instances. Shutting off the water which has been flooding the producing sands from some of the dead adjoining wells is believed to have caused the increases.

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California Is Confident of Curtailment

Little Progress in First Week Not Unexpected. Governor Signs Conservation Bill. Gasoline Shipments Drop

By L. P. Stockman
Staff Correspondent, California Fields

LOS ANGELES, Calif., June 6.—Very little progress was made in reducing California's crude oil production to the new curtailment figure during the past week but the operators general committee is nevertheless sanguine of reaching the new objective within the next 10 days. At the end of the first week there was very little tangible evidence of additional curtailment in conformity with the modified curtailment program effective June 1. This can be attributed to the failure of major companies to announce a definite policy with respect to future curtailment work. Something along this line is expected to be announced within a few days and if sufficient inducement is offered a substantial part of the present excess production will be reduced.

Elwood, Santa Fe Springs, Playa Del Rey and Long Beach are responsible for a substantial part of the present production in excess of the new allotment assigned June 1. Late in the week Santa Fe Springs was still producing approximately 15,000 bbls. per day in excess of its allotment of 55,000 bbls. daily. Long Beach was over about 10,000 bbls. per day, Elwood 9,000 bbls., and Playa Del Rey 14,000 bbls. It is clear that operators in these fields will have to bear down quite hard to reach the new objective. If this materializes, gasoline prices are expected to be stabilized somewhere around 15 cents per gallon with a corresponding adjustment in the posted price for crude oil. It will be interesting to watch the next revision made in crude oil quotations in California due to the existing inverted schedule. Some are inclined to believe light refining crude will be increased to the point where it will command a price slightly higher than that offered for heavy unrefinable crude. Others believe buyers of crude will continue to maintain an inverted schedule under the terms of which heavy unrefinable crude will command a price in excess of that for light oil.

Gasoline Shipments Decline

There has been a very marked decline in shipments of gasoline to the Atlantic Seaboard within the past few weeks and this condition is expected to become more pronounced during the next several months, although of course we may anticipate limited shipments of gasoline by California companies having eastern affiliations. In this group are included probable shipments by the Tide Water Associated, General Petroleum, a subsidiary of Socony, and The Texas Company. During the week ending May 31, only 167,942 bbls. of gasoline left California ports in the domestic trade for the Atlantic Seaboard. The week previous California marketers loaded 512,457 bbls. of gasoline for eastern domestic markets. During the first five days of June not a single barrel of gasoline was lifted in California for shipment to the Atlantic Seaboard. Export shipments of gasoline to Atlantic and Pacific foreign ports have held up fairly well for several weeks, although the total shipments for the year to date of 4,329,548 bbls. are considerably below the 6,567,770 bbls. shipped to foreign ports at the same time last year. Intercoastal shipments of gasoline to the Atlantic Coast for domestic consumption are approximately 500,000 bbls. below similar shipments for the first five months of last year but are expected to register a substantial decline during the next several months.

Conservation Bill Signed

Governor James Rolph of California signed Senator Will R. Sharkey's bill which contemplates a compulsory reduction in crude oil production to actual requirements. The governor affixed his signature to this bill on June 3 and it will accordingly become a law on August 3, 60 days after executive approval. Maximum effectiveness will not be reached until some time later, as it will require an additional month or two to perfect the mechanics of operation and iron out final details. Governor Rolph failed to give his approval to Assembly Bill No. 1,444, which creates a new department of oil and gas, and developments indicate it will be vetoed. After a minute survey the governor was advised by a committee of operators that it was invalid and would therefore jeopardize California's latest conservation bill No. 362, which he signed on June 3.

Kettleman Hills

Another new well was finished in the Kettleman Hills Field during the week and several more are scheduled for early completion. The Kettleman North Dome Association completed its first well in the North Dome a few days ago when No. 41-2P was brought in flowing 3,528 bbls. of 37.1 gravity oil per day. It was swabbed in at 8 p.m. June 2 and turned into the series of high pressure gas traps at 3:30 a.m. June 3. The association's new well, bottomed at 7,879 feet and finished with a 6⅝-inch liner carrying 1,659 feet of perforated, is an offset to the Standard's No. 38-35J, which was killed a few days ago preparatory to being deepened to the Ochsner zone. The new well finished this week was originally started by the Continental Oil Co. and came into possession of the Kettleman North Dome Association when that organization assumed actual control of the various properties brought under unit control March 1. The initial production was somewhat below expectations but the flow may build up after the well has been on production for several days.

In addition the Kettleman North Dome Association has several other potential producers nearing completion. Two, No. 27-34J, and No. 2-1P, should be tanking oil within a few days. Another well of the association, No. 23-1P, should be finished within a few weeks. The Standard has six wells below the 7,000-foot level and should be in position to finish several additional producers within the next 30 days. One, No. 65-29J, has been delayed for some weeks due to mechanical trouble at 7,735 feet, and it may be some little time before additional footage can be made. No. 1 Amerada King of the Union was at 7,825 feet a few days ago and this well, barring mechanical trouble, should be tanking oil before the close of the month. The Shell Oil Co. has reached 8,520 feet in No. 1 Dixon, located out on the north flank, and it is expected to be given an early test. The Superior Oil Co. spudded in No. 3 Huffman a few days ago and the bit is already below 1,000 feet. This well, in Section 29-21-17, has the tallest derrick ever erected in the State of California and will permit the pulling of 132 feet of drill pipe. The rig is 174 feet in height with a 32-foot base and, as is customary with new wells at Kettleman Hills, utilizes the topographic features of the field which permits the construction of an open cellar. The North American Consolidated's No. 1 Blauvelt is at 7,890 feet and, while it is still in the brown shale, it should pass out of this formation shortly.

Lost Hills-Beiridge

The Universal Consolidated's No. 49 in Section 32-26-21 has revived interest in the possibility of developing prolific Temblor production in the Lost Hills Field of Kern County after a long period of uncertainity. This well, which tested out an upper sand with negative results several months ago, has cored 65 feet of what appears to be an exceptionally good looking sand and a formation tester is being run to determine whether the showings justify the landing of an additional string of pipe and another production test. This new oil sand was topped at 5,484 feet and will change the entire outlook of the Lost Hills Field if substantial production is developed. The outcome of is of special importance because it may revive attempts to unify development in both the Lost Hills and Belridge Fields. Preliminary discussions were held several months ago and a committee was appointed to determine the feasibility of unifying development work in these two areas. The failure of the Universal to develop commercial production in No. 49 higher up in the hole temporarily removed the necessity of unit operation and consequently the committee let the matter rest temporarily. If the Universal succeeds in developing Temblor production, the committee will immediately set to work and outline a plan for unified development.

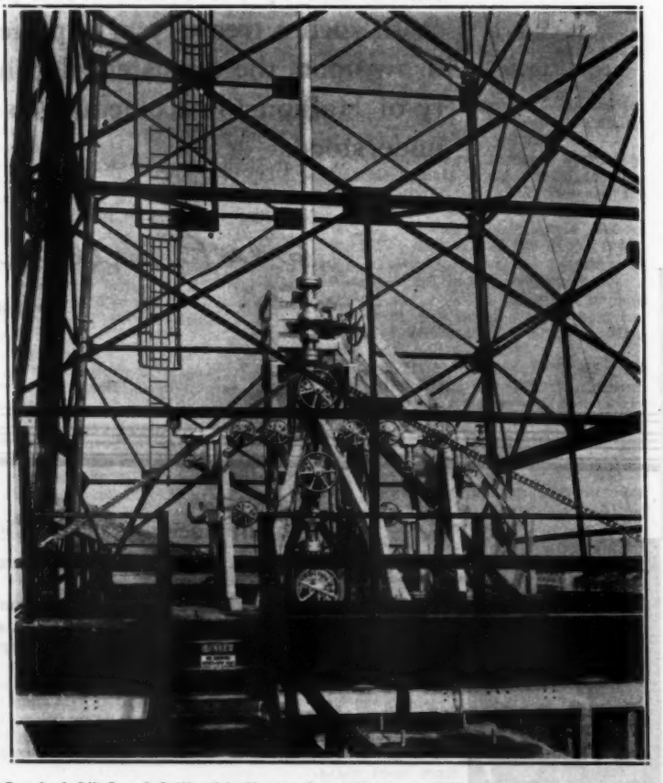
Several additional wells are scheduled to be given early production tests in the North Belridge Field of Kern County and, while this area is being held in restraint by limiting drilling operations, production is expected to register a substantial increase within 60 days. The Reward Oil Co., a subsidiary of the Associated, has completed construction of the necessary gas traps and its No. 4 in Section 34-27-20 should be turned loose within a few days. It has shown considerable pressure and the Associated is making preparations to handle up to 2,500 bbls. per day. The Belridge Oil Co., which discovered the deep Temblor production in the North Belridge Field, is expected to make a production test on No. 8 in Section 35-27-20 during the next few weeks. This well is stratigraphically higher than No. 15, the company's deep zone discovery well, and a much larger initial is anticipated.

Long Beach

There was only one well put on production in the Long Beach Field during the week, but this new producer made up in production what the field lacked from a numerical standpoint. The new well was the Davis Investment Corp.'s No. 18 Signal, which came in under a natural flow doing 1,590 bbls. of exceptionally clean 29.6 gravity oil and 1,460,000 feet of natural gas per day from the deep sand at 7,150 feet. This well was finished with a 6⅝-inch combination string cemented through perforations at 6,250 feet and has 900 feet of perforated pipe on bottom. Completions in the Long Beach Field have been few for several months due to the conclusion of drilling operations and a temporary suspension of work due to the inability of operators to dispose of current production at its intrinsic value. Several additional wells are nearing completion, and some should be finished during the next few weeks.

The Superior Oil Co. has suspended drilling operations on its two deep zone exploratory wells in the Huntington Beach town lot section for an indefinite

NEW PRODUCER AT KETTLEMAN HILLS



Standard Oil Co. of California's No. 8-1 P., at Kettleman Hills, which flowed 2,015 bbls. of 61.2 gravity crude and 79,000,000 feet of gas. The well ultimately will be killed and carried to a lower zone because of its high gas-oil ratio.

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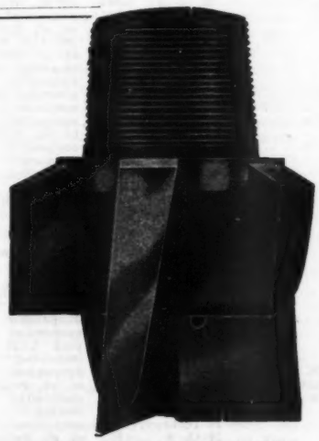

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period. This suspension is not indicative of unfavorable conditions but can be attributed primarily to the decision of the company to retard develop until a more opportune moment. The Superior has three wells standing cemented just above the probable new zone but no further work is contemplated for several months. W. E. McCaslin is still drilling in No. 17 Transport, the bit being down 7,720 feet a few days ago. This well appears to be drilling in a faulted zone and is not considered especially important unless a new zone is picked up below that believed to have been discovered by the Superior Oil Co. last year. Drilling operations at Huntington Beach have been reduced to a minimum as several other wells were suspended simultaneously with the cessation of work by the Superior.

Playa Del Rey

Drilling operations in the Playa Del Rey Field of Los Angeles Basin were not productive of any new wells and it is doubtful if any additional completions will be chalked up during the coming week. There are only five incompleted drilling projects under way at present. In addition to the wells still making hole, 30 other projects have been suspended either because of the unfavorable outlook or the failure to encounter a sand of sufficient thickness to justify expectation of developing commercial production. There are 136 wells on production in the Playa Del Rey Field, of which 76 are producing from the upper horizon and 60 from the lower. A survey shows one well producing in excess of 1,000 bbls. per day, 11 doing between 500 and 1,000 bbls., 25 making from 200 to 500 bbls., 55 producing from 100 to 200 bbls., and 44 pumping less than 100 bbls. The only well producing in excess of 1,000 bbls. in the Playa Del Rey Field is the Herndon Petroleum Co.'s No. 2, flowing 2,075 bbls. No. 1 on this same lease is flowing 505 bbls. The group of wells producing better than 500 bbls. includes the Jergins Syndicate's No. 1 Troxel, flowing 85 bbls., Birch Royer's No. 2 Lovell, 860 bbls., Pacific Shore's No. 1 Brick, 805 bbls., Knox Powell and Stockton's No. 2 Davis, 798 bbls., and the Ohio's No. 2-L flowing 774 bbls. The Union Oil Co. suspended work on No. 1 Vidor, an outpost in the extreme eastern part of the field, due to the failure to develop commercial production at 5,991 feet. This well failed to have sufficient kick to result in a natural flow and the company will be obliged to resort to artificial stimulation if and when work is resumed.

The Wilshire Oil Co. has set a string of casing in its No. 1 Gun Club, a new well in the Potrero Field of Los Angeles Basin, preparatory to testing the shallow zone encountered at 3,737 feet. This well is on property quitclaimed by the Associated several months ago. Drilling and production activities in the town lot section of the Potrero Field are at a low ebb and will probably continue so for an indefinite period. Drilling operations in the Santa Fe Springs Field are likewise reflecting existing unfavorable conditions, although the cessation of work can be attributed to the conclusion of drilling operations due to the lack of drill sites. The Union started a new well on the Bell lease in this field late in May and normal footage has been recorded. This does not indicate a resumption of drilling by the Union, as the spudding in of this well was in conformity with lease requirements. The Union's properties in this field are not overly developed, and the company still has a number of locations available. The Brea Canyon Oil Co. has reached 7,275 feet in its No. 47, a deep test in the Brea Olinda Field of Los Angeles Basin, but has not yet encountered anything resembling production. The Pedro Petroleum Corp. is completing preparations to start a new wildcat in the San Pedro section of Los Angeles Harbor in Section 14-5-14. The company has leased 450 acres, including approximately 300 town lots, and tentative plans call for initiation of work on or before June 25.

Ventura Avenue

The Associated Oil Co. completed a new well in the Ventura Avenue Field but a check indicates the probability that the company will be obliged to effect another cement job as the output, 1,375 bbls., is cutting 57 per cent water and emulsion. This well was carried to 7,839 feet and finished with an 8⅝-inch oil string carrying 1,295 feet of perforated. Several new wells are being started in the Ventura Avenue Field by both the Associated and Shell. This does not indicate competitive drilling but merely reflects the completion of an overly large number of new wells during the past 60 days. Field production has not been adversely affected by the completion of numerous wells during the past two months as curtailment work by the Associated and Shell has prevented field production from exceeding the allowable established by the recent economic survey. There are only one or two incompleted drilling projects under way in the Elwood Field and, while this cessation might normally be expected to be reflected in decreased production, the output has been substantially in excess of its maximum allowable for the past several months. The General Petroleum recently killed No. 2 on Needham tideland permit No. 55 and this well, which was given a preliminary production test several weeks ago, will be carried down in search of a deeper and more productive horizon. The General Petroleum is drilling one other well in the Rincon Field of Ventura County, but

(Continued on Page 102)

TANKER SHIPMENTS FROM LOS ANGELES TO ATLANTIC AND GULF COAST PORTS

Commodity—	Total this week	Daily average	Total last week	Daily average	This year to date	Same time last year
Crude oil	.....	.....	.....	.....	.. ..	68,690
Fuel oil	.....	.....	.....	.....	.....	71,950
Diesel and gas oil	.....	.....	.....	.....	892,230	1,699,967
Gasoline	167,942	23,992	512,457	73,208	6,437,681	6,974,420
Kerosene	.....	.....	.....	.....	41,512	.....
Coastwise—						
Crude oil	299,985	42,855	162,021	23,146	8,963,349	6,317,604
Fuel oil	272,592	38,942	296,891	42,413	5,964,178	7,385,086
Diesel and gas oil	.....	.....	108,232	15,462	727,718	789,472
Gasoline	205,914	29,416	394,242	56,320	5,397,975	4,753,730
Kerosene	.....	.....	9,987	1,427	167,028	71,497
Naphtha distillate	.....	.....	.....	.....	4,952	.....
Exports—						
Crude oil	128,954	18,423	128,711	18,387	2,892,031	2,767,680
Fuel oil	212,520	30,360	409,871	58,553	6,421,667	7,581,213
Diesel and gas oil	123,058	17,580	64,078	9,154	1,626,746	1,981,990
Gasoline	300,576	42,939	212,768	30,395	4,329,548	6,567,770
Kerosene	102,770	14,681	.....	.....	698,906	1,719,978
Lubricants	.....	.....	.....	.....	18,978	10,082

TANKER SHIPMENTS FROM SAN FRANCISCO TO ATLANTIC AND GULF COAST PORTS

Diesel and gas oil	.....	.....	.....	.....	.....	88,280
Gasoline	.....	.....	71,220	10,174	338,719	641,680
Lubricants	.....	.....	.....	.....	14,015	5,866
Coastwise—						
Fuel oil	.....	.....	151,195	21,599	1,757,502	1,603,643
Diesel and gas oil	1,529	218	49,887	9,984	160,172	152,544
Kerosene	1,877	268	5,502	786	117,818	119,387
Gasoline	22,638	3,234	34,988	4,998	1,198,044	1,761,169
Naphtha distillate	.....	.....	49,780	7,111	49,780	.....
Exports—						
Crude oil	.....	.....	.....	.....	77,556	3,075
Fuel oil	123,481	17,640	63,140	9,020	638,876	481,000
Diesel and gas oil	13,070	1,867	.....	.....	245,358	231,990
Gasoline	117,500	16,786	94,435	13,491	1,721,829	1,522,369
Kerosene	.....	.....	96,081	13,726	409,142	367,124
Lubricants	.....	.....	.....	.....	.....	13,677

IMPORTANT SOUTHERN CALIFORNIA WILDCATS

Company, well and location—	S-T-R	Depth	Status
Olympic Realty Corp., No. 1 Barnes, Los Angeles Co.	14- 2-15	6,078	fishing
Hines Pet., No. 1 Ocean Park, Los Angeles Co.	9- 2-15	6,402	br. sh. drilling
Taylor Oil Co., No. 1 Culver, Los Angeles Co.	12- 2-15	6,238	suspended
Mesmer City Corp., No. 1 Mesmer, Los Angeles Co.	24- 2-16	5,995	sd. sh. drilling
Dwyer & Becker, No. 1 Compton, Los Angeles Co.	17- 3-13	4,520	suspended
Allison Synd., No. 1 Baldwin, Los Angeles Co.	8- 2-14	5,110	suspended
Cal. Ventura Oil Co., No. 1 Manhattan, Los Angeles Co.	30- 2-14	6,525	suspended
Cal. Ventura Oil Co., No. 1 Hermosa, Los Angeles Co.	31- 2-14	3,396	suspended
Cal. Ventura Oil Co., No. 2 Hermosa, Los Angeles Co.	31- 2-14	3,200	suspended
Cal. Oilfields Corp., No. 1 Hermosa, Los Angeles Co.	31- 2-14	2,560	suspended
Carniel Oil Corp., No. 1 Hermosa, Los Angeles Co.	31- 2-14	3,114	suspended
Hermosa Expl. Co., No. 1 Hermosa, Los Angeles Co.	31- 2-14	3,050	105 bbls. daily
Kellogg, W. R., No. 1 Hermosa, Los Angeles Co.	6- 4-14	3,106	sd. sh. drilling
Westwood Pet., No. 1 Hermosa, Los Angeles Co.	6- 4-14	3,200	cleaning out
Tulsa Oil Co., No. 1 Hermosa, Los Angeles Co.	6- 4-14	3,060	testing
McMahon & McDonald, No. 1 Watts, Los Angeles Co.	12- 3-14	4,665	suspended
Staple Oil Co., No. 1 Manhattan, Los Angeles Co.	24- 3-15	2,000	sd. sh. drilling
York & Smullin, No. 1 Watson, Los Angeles Co.	29- 4-13	4,250	sd. sh. drilling
Wilmington Consd., No. 1 Watson, Los Angeles Co.	17- 4-13	1,012	suspended
Brubaker, W. O., No. 1 Van Nuys, Los Angeles Co.	11- 2-15	2,700	suspended
Rucker & Croul, No. 2 Puente, Los Angeles Co.	27- 2-10	2,200	suspended
Arden Oil Co., No. 1 Puente, Los Angeles Co.	15- 2-10	3,325	suspended
D. & B. Oil Co., No. 1 Puente, Los Angeles Co.	3- 2-10	4,620	suspended
El Dorado Oil Co., No. 1 Puente, Los Angeles Co.	30- 2- 9	1,092	suspended
Marcel Pet. Co., No. 1 Puente, Los Angeles Co.	31- 2- 8	3,100	suspended
Cudahy Oil Co., No. 1 Bell, Los Angeles Co.	30- 2-12	1,370	cleaning out
The Texas Company, No. 1 Montebello, Los Angeles Co.	4- 2-12	3,977	hd. sd. drilling
Weist Oil Co., No. 1 Montebello, Los Angeles Co.	34- 1-11	4,842	rebuild rig
Hammer, Fred, No. 1 Alhambra, Los Angeles Co.	24- 1-13	3,412	suspended
Los Gatos Oil Co., No. 1 El Monte, Los Angeles Co.	16- 1-11	3,280	suspended
Rucker, L. W., No. 1 Calabasas, Los Angeles Co.	26- 1-17	753	cleaning out
Olympic Corp., No. 1 Calabasas, Los Angeles Co.	18- 1-17	5,808	hd. sd. drilling
Nesa Pet., No. 1 Newport, Orange Co.	21- 6-10	4,910	suspended
Hall, H. L., No. 1 Newport, Orange Co.	20- 6-10	790	suspended
Gesell, T. F., No. 1 Newport, Orange Co.	29- 6-10	1,470	cleaning out
Standard, No. 1 Newport, Orange Co.	26- 6-10	4,850	hd. sd. drilling
Western Gulf, No. 1 Santa Ana, Orange Co.	12- 3- 8	3,267	suspended
Geick Oil Co., No. 1 Sunset Beach, Orange Co.	20- 5-11	4,661	gr. sd. drilling
Beck, F. A., No. 1 Corona, Riverside Co.	8- 4- 6	481	sd. sh. drilling
Beck, F. A., No. 1 Beaumont, Riverside Co.	1- 3- 1	520	sd. sh. drilling
Grey, H. H., No. 1 Redlands, San Bernardino Co.	25- 1- 2	2,392	suspended
Borderland Oil Co., No. 1 Encinitas, San Diego Co.	12-13- 4	2,510	suspended
Borderland Oil Co., No. 1 Point Loma, San Diego Co.	30-16- 2	4,966	hd. sd. drilling
South Bay Oil Co., No. 1 Border, San Diego Co.	31-18- 2	....	location
Carr, O. K., No. 1 Capistrano, San Diego Co.	13- 8- 8	5,250	suspended

IMPORTANT NORTHERN CALIFORNIA WILDCATS

Company, well and location—	S-T-R	Depth	Status
Western Gulf, No. 1 Santa Maria, Santa Barbara Co.	5- 9-35	6,690	hd. sd. drilling
Barnsdall, No. 1 Gato Ridge, Santa Barbara Co.	9- 8-32	6,510	plugging back
Midwest Oil Co., No. 1 Los Alamos, Santa Barbara Co.	2- 7-33	2,401	sd. sh. drilling
Smith, W. E., No. 1 Lompoc, Santa Barbara Co.	18- 7-34	100	suspended
Zaca Oil Co., No. 1 Los Olivas, Santa Barbara Co.	20- 7-31	rig	rigging up
General Pet., No. 1 Goleta, Santa Barbara Co.	21- 4-28	4,533	gas—shut in
General Pet., No. 2 Goleta, Santa Barbara Co.	21- 4-28	4,350	gas—shut in
General Pet., No. 3 Goleta, Santa Barbara Co.	21- 4-28	5,183	testing
General Pet., No. 133 Goleta, Santa Barbara Co.	21- 4-28	2,030	suspended
General Pet., No. 134 Goleta, Santa Barbara Co.	21- 4-28	2,053	suspended
General Pet., No. 136 Goleta, Santa Barbara Co.	21- 4-28	2,047	suspended
General Pet., No. 137 Goleta, Santa Barbara Co.	21- 4-28	2,050	suspended
General Pet., No. 138 Goleta, Santa Barbara Co.	21- 4-28	4,931	suspended
General Pet., No. 139 Goleta, Santa Barbara Co.	21- 4-28	2,051	suspended
Boles Oil Co., No. 140 Goleta, Santa Barbara Co.	22- 4-28	1,040	suspended
U. S. Pet., No. 141 Goleta, Santa Barbara Co.	20- 4-28	1,035	suspended
U. S. Pet., No. 142 Goleta, Santa Barbara Co.	20- 4-28	2,012	suspended
U. S. Pet., No. 143 Goleta, Santa Barbara Co.	20- 4-28	1,019	suspended
El Camino, No. 149 Goleta Tideland, Santa Barbara Co.	22- 4-28	1,035	suspended
South. Cal. Drlg. Co., No. 1 Goleta, Santa Barbara Co.	12- 4-29	3,165	abandoning
Bolsa Chica, No. 191 Goleta, Santa Barbara Co.	24- 4-29	4,191	suspended
Bellview Oil Co., No. 159 Goleta, Santa Barbara Co.	24- 4-29	2,099	suspended
Cochran, J. H., No. 1 Naples, Santa Barbara Co.	7- 4-29	5,184	cleaning out
Johnson, George, No. 1-A Goleta, Santa Barbara Co.	19- 4-27	3,050	reaming
Sovereign Oil Co., No. 1 Guadalupe, Santa Barbara Co.	20-10-35	5,500	cleaning out
Pacific Western, No. 1 Gibraltar, Santa Barbara Co.	14- 5-27	2,345	suspended
Associated, No. 1 Rincon Creek, Ventura Co.	19- 4-24	2,080	suspended
C. C. M. O. Co., No. 2-A Rincon, Ventura Co.	23- 3-24	10,030	testing
Continental, No. 1 Rincon, Ventura Co.	23- 3-24	4,360	sd. sh. drilling
Pure Oil Co., No. 1 S. P. Canyon, Ventura Co.	15- 4-21	2,591	suspended
Superior Oil Co., No. 1 Sespe, Ventura Co.	14- 4-21	7,000	sd. sh. drilling
Merchants Pet., No. 1 Sespe, Ventura Co.	1- 4-20	1,330	265 bbls. daily
Magu Synd., No. 1 Oxnard, Ventura Co.	17- 1-21	4,000	sd. sh. drilling
Mex Cal Oil Co., No. 1 Conejo, Ventura Co.	12- 1-20	188	cleaning out
Hansen Pet., No. 1 Conejo, Ventura Co.	24- 1-20	230	suspended
Wilshire Oil Co., No. 1-A Buttonwillow, Kern Co.	7-29-24	7,000	cleaning out
Kent & McDonald, No. 1 Temblor Hills, Kern Co.	3-32-22	1,672	suspended
Federal Drlg. Co., No. 1 Buena Vista, Kern Co.	20-31-24	5,367	suspended
General Pet., No. 1 Beiridge, Kern Co.	30-28-21	4,560	br. sh. drilling
The Texas Company, No. 1 Beiridge, Kern Co.	22-27-20	5,045	suspended
Standard, No. 2 Beiridge, Kern Co.	31-27-20	5,540	reaming
Ohio Oil Co., No. 1 Beiridge, Kern Co.	36-27-20	5,980	suspended
Reward Oil Co., No. 1 Beiridge, Kern Co.	34-27-20	5,510	to test
Continental, No. 1 Beiridge, Kern Co.	36-27-20	4,901	sd. sh. drilling
Wallace, K. C., No. 1 Beiridge, Kern Co.	32-29-21	4,222	recemented
Rio Cal. Pet., No. 1 Shale, Kern Co.	2-27-18	2,355	suspended
Wicker, Sy, No. 1 Arvin, Kern Co.	12-30-28	1,250	suspended
Shell, No. 1 Weed Patch, Kern Co.	29-30-29	8,419	cleaning out
Shell, No. 2 Weed Patch, Kern Co.	29-30-29	6,410	suspended
Shell, No. 3 Weed Patch, Kern Co.	32-30-29	5,784	cemented
Osborn, Colter, No. 1 Weed Patch, Kern Co.	15-30-29	3,700	hd. sd. drilling
Mohawk Oil Co., No. 1 Weed Patch, Kern Co.	32-30-29	6,150	suspended
Mohawk Oil Co., No. 2 Weed Patch, Kern Co.	4-31-29	rig	suspended
Alpine Oil Co., No. 1 Weed Patch, Kern Co.	13-31-29	2,785	suspended
Standard, No. 1 Devils Den, Kern Co.	14-25-18	3,313	plug 2,035 ft.
Hannah, Tom, No. 1 Devils Den, Kern Co.	35-25-18	2,925	cemented
Cumberland Oil Co., No. 1 Devils Den, Kern Co.	21-26-18	1,590	suspended
Temblor Dev. Co., No. 1 Blackwell Corner, Kern Co.	14-26-19	916	sd. sh. drilling
Miley, E. J., No. 1 Blackwell Corner, Kern Co.	17-26-19	rig	suspended
Shell, No. 1 Semitropic, Kern Co.	17-27-22	8,700	testing
Moran & DeCamp, No. 1 Mojave, Kern Co.	26-10-14	750	suspended
Kendall Dev. Co., No. 1 Mojave, Kern Co.	27-11- 9	496	sd. sh. drilling
Meridan Oil Co., No. 1 Antelope, Kern Co.	11- 9-15	3,804	suspended
Ritchie, J. J., No. 1 Tejon, Kern Co.	33-11-19	5,930	sd. sh. drilling
Associated, No. 1 Jacalitos, Fresno Co.	22-21-15	4,931	sd. sh. drilling
Panorama Oil Co., No. 1 Carizzo, San Luis Obispo Co.	7-31-21	4,019	cleaning out
Tray El Oil Co., No. 1 Carizzo, San Luis Obispo Co.	7-32-22	2,030	hd. sd. drilling
Cities Service, No. 1 Creston, San Luis Obispo Co.	20-28-15	417	sd. sh. drilling
Paso Robles Synd., No. 1 Paso Robles, San Luis Obispo Co.	34-27-11	4,015	sd. sh. drilling
Latin Amer. Pet., No. 1 Shandon, San Luis Obispo Co.	21-27-15	4,615	recemented
Schilling, C., No. 1 Atascadero, San Luis Obispo Co.	24-28-12	1,200	sd. sh. drilling
Schockley, C., No. 1 Pismo, San Luis Obispo Co.	13-32-13	3,094	suspended
Jergins, A. T., No. 1 Arroyo Grande, San Luis Obispo Co.	6-32-13	rig	rigging up
Pacific Inland, Well No. 1, Monterey Co.	19-23-15	1,324	hd. sd. drilling
Irma Investment Co., No. 1 Dudley Ridge, Kings Co.	7-23-20	1,345	testing
O'Donnell, J. E., No. 1 Dudley Ridge, Kings Co.	7-23-20	1,635	gas well—idle
Valley Expl. Co., No. 1 Dudley Ridge, Kings Co.	20-23-20	2,750	cleaning out
Kettleman Lakeview, No. 1 Tulare Lake, Kings Co.	11-23-19	1,304	suspended
Purman, T. H., No. 1 Reef Ridge, Kings Co.	36-23-17	3,595	cleaning out
Seymour, L. W., No. 1 Avenal, Kings Co.	10-23-16	1,148	fishing
Utah Dev. Co., No. 1 Pyramid Hills, Kings Co.	13-24-18	....	material
Twin State Oil Co., No. 1 Point Arena, Mendocino Co.	14-12-17	6,600	suspended
Orinda Pet., Well No. 1, Contra Costa Co.	32- 1- 3	2,012	cleaning out
Pettingall, C. E., No. 1 Porterville, Tulare Co.	15-22-27	920	suspended
Knapp, George, No. 1 Porterville, Tulare Co.	20-22-27	700	suspended
Inland Valley Oil Co., No. 1 Visalia, Tulare Co.	24-17-24	2,092	suspended
Larson, S. E., No. 1 Tulare Lake, Tulare Co.	20-24-23	660	sd. sh. drilling
Colusa Oil Co., No. 1 Bush, Colusa Co.	31-15- 4	920	hd. sd. drilling
Oakdale Oil Co., No. 1 Oakdale, Stanislaus Co.	3- 2-10	4,165	hd. sd. drilling
Orland Oil Synd., No. 1 Orland, Tehama Co.	31-23- 3	2,520	redrilling
Sargent Oil Co., No. 1 Sargent, Santa Clara Co.	1-12- 3	rig	suspended

East Texas Completions 108 in Week

Total Estimated Recovery Put at 2,000,000,000 Bbls. for the Entire District. Western Limits Being Defined

By L. E. Bredberg
Fort Worth Bureau, The Oil and Gas Journal

FORT WORTH, Tex., June 8.—Completions in East Texas have at last been raised to the 100 mark for a week, due to this week's total number of completions having increased to 108, all but one being producers, the other a dry hole. Last week's total was only 82, making this week's increase 26, showing how drilling activities have been increasing. Such increases will probably not be duplicated during the following weeks, since The Texas Company and Humble Oil & Refining Co. and Arkansas Fuel Oil Co. have withdrawn their postings and will purchase "at will," or pay the average field price for what they purchase, if they continue to purchase outside oil.

These three companies, as likewise other major pipe line and purchasing companies in the district, had postings of 67 cents until May 26 when the Humble Oil & Refining Co. cut the price to 37 cents. This was followed by other major buyers. Numerous purchasers had been paying less than the former postings, and continued to buy oil below the new postings, consequently the three companies decided to meet the lower prices, and purchase as they see fit. This will undoubtedly create a decided change in the number of drilling wells in the district, and will act as one of the greatest factors in checking activities.

Some of the operators are forced to drill offset wells, but those not so forced will no doubt think twice before they spud in tests under the present conditions, and price situation, as it is obvious they will make but little over the cost of the lease and wells, if drilled now, while if held up until later they will realize something on the expenditures made. Holding up drilling by many operators who might otherwise have drilled if they could have obtained 67 cents or only 37 cents per barrel for their oil, will cut down the potential production.

Drilling Operations

There is now a total of 160 drilling wells in the Joiner area, Rusk County, with 35 locations reported this week, and 36 completions. In the Kilgore area there were 49 completions, 53 first reports and 190 drilling wells. The Lathrop area has 124 drilling wells; 23 locations were reported for the week, and 24 completions. There are 93 wildcats drilling in the entire district with 10 locations made and one completion.

Latest proration figures, covering the period from 7 a.m. June 1 to 7 a.m. June 16, 1931, show a total of 296 producers in the Joiner area having a 24-hour potential of 555,229 bbls., and the Kilgore area has a total of 314 producing wells having a 24-hour potential of 741,876 bbls. Wells are produced through 2½-inch tubing on three-fourths-inch choke on a two-hour test in the Kilgore Pool to obtain the potentials, and in the Joiner Pool wells are tested one hour through 2½-inch tubing. There are 13 violators in the former pool and 22 violators of proration in the latter pool. Production of the 13 violators is 43,979 bbls. per day in the Kilgore Pool and 56,733 bbls. per day in the Joiner Pool. There were 25 unconnected wells in the two areas.

Estimated Recovery

The number of productive acres in the Lathrop or Gregg County area is placed at 40,500 acres with an estimated ultimate recovery of 20,000 bbls. per acre, making a total recovery estimated at 810,000,000 bbls., while in the Kilgore Pool the estimated total recovery is placed at 666,000,000 bbls., based on an estimated ultimate recovery of 20,000 bbls. per acre from the estimated 33,300 acres good for production. Total estimated recovery for the Joiner area is placed at around 52,000,000 bbls. This makes a total estimated recovery close to 2,000,000,000 bbls. for the entire district, or three producing areas.

The western limits of the district are now becoming more clearly defined due to wells being completed this week showing water, or refusing to flow and requiring pumping. Walker & Harrison's No. 1 Walker, in the Martha Dillard Survey, approximately 1 mile west and a little north of Gladewater, evidently marks the western limits of the Lathrop area as the well has refused to flow from sands cored at 3,587 and 3,590 feet. The latter is the present total depth, but tubing and liner has been pulled, and the well will be deepened in an effort to make it flow. It is considered by many as being near the water level, and whether this is the case will soon be told when it is deepened. If deepening brings out a good well for it, the western limits of Gregg County still remains undefined.

Water Limiting Joiner Area

Two wells in the western Kilgore Pool are showing considerable water at this time, casting ominous reflections upon the northwestern part of Rusk, and southeastern part of Smith, and limiting the Kilgore area in this direction. These two wells are Sun Oil Co.'s No. 1 Barker and Elliott's No. 1 Barker, the former making 2 to 3 per cent water and b.s. and the latter 33 per cent water and b.s. on open flow. The latter is now pinched to 5 bbls. per hour and is producing pipe line oil.

Southern Crude Oil Purchasing Co.'s No. 1 Smith in the William Killen Survey, northwestern Rusk County, approximately 1 mile west of the nearest producer, Devonian and Gulf Production Co.'s No. 1 Motley, came in June 6 making 113 bbls. the first hour through three-quarters-inch choke, or at the rate of nearly 3,000 bbls. per day, showing no water. It is now pinched to 100 bbls. per day, as it is considered dangerously near the water line, and pinching will be a great factor in staying water encroachment. Total depth of the well is 3,763 feet. Top of the sand was 3,758 feet.

There are now 14 injunction suits against proration in East Texas, and four of these are to be tried at Austin on June 10. The most important case will come up in federal court June 24 when the McMillan hearing will be made before three federal judges at Houston.

COMPLETIONS IN EAST CENTRAL TEXAS

Gregg County

Arkansas Fuel Oil Co.'s No. 1-B J. C. and R. S. McKinley, oil sand 3,569-86 feet, initial production 97½ bbls. per hour through eleven-sixteenths-inch choke through tubing, total depth 3,586 feet. Guiberson and others' No. 1 Thrasher Stuckey, oil sand 3,570-3,620 feet, initial production 1,018 bbls. per hour wide open, total depth 3,620 feet. E. L. Smith Oil Co.'s No. 1 Tom Clemens, oil sand 3,668-83 feet, initial production 94 bbls. per hour through eleven-sixteenths-inch choke on tubing, total depth 3,683 feet.

Yount Lee Oil Co.'s No. 1-B J. C. McKinley, oil sand 3,621-41 feet, initial production 540 bbls. in two hours on five-sixteenths-inch choke, total depth 3,641 feet. Arkansas Fuel Oil Co.'s No. 2 P. D. Harrison, abandoned location. Angle and Bytex's No. 1 C. R. Parker, abandoned location. Arkansas Fuel Oil Co.'s No. 1 Vonie Calvin and others, oil sand 3,507-37 feet, initial production 225 bbls. first 15 minutes on open flow, total depth 3,537 feet.

Campbell and others' No. 1 T. M. Collins, oil sand 3,653-3,707 feet, initial production 112 bbls. in 30 minutes through tubing open, total depth 3,707 feet. Columbia Oil & Gas Co.'s No. 1 Thad Snoody, oil sand 3,584-3,613 feet, initial production 119 bbls. on eleven-sixteenths-inch choke per hour on tubing, total depth 3,613 feet. Hawkeye Petroleum Co.'s No. 1 R. S. and J. C. McKinley, oil sand 3,587-3,615 feet, initial production 368 bbls. per hour through 2½-inch tubing and casing cracked, 90 bbls. per hour on eleven-sixteenths-inch choke on tubing, total depth 3,616 feet.

Mid-Kansas Oil Co.'s No. 2 E. M. Nettleton, oil sand 3,458-70 feet, initial production 187 bbls. per hour through 2½-inch tubing open and 92 bbls. per hour on eleven-sixteenths-inch tubing choke, total depth 3,479 feet. Owens and others' No. 1 C. E. Davis, oil sand 3,535-72 feet, initial production 113 bbls. per hour through eleven-sixteenths-inch tubing choke, total depth 3,572 feet. Primrose Oil Co.'s No. 1 W. L. Blackstone, oil sand 3,562-85 feet, initial production 100 bbls. per hour on eleven-sixteenths-inch casing choke, total depth 3,585 feet. Sinclair Oil & Gas Co.'s No. 4 Mattie Moncrief, oil sand 3,554 feet, initial production 220 bbls. first hour and 215 bbls. second hour through 2½-inch open tubing, total depth 3,572 feet.

Stanolind and Simms Oil Co.'s No. 1 J. J. Flewellan, oil sand 3,643-50 feet and 3,651-53 feet, initial production 47 bbls. in 15 minutes through open tubing, total depth 3,660 feet. Mid-Kansas Oil & Gas Co.'s No. 2 J. J. Castleberry, oil sand 3,588-3,613 feet, initial production 125 bbls. per hour open through tubing, total depth 3,613 feet. Magnolia Petroleum Co.'s No. 1 Clem Jones, oil sand 3,619-30 feet, initial production 225 bbls. per hour open through tubing, total depth 3,630 feet.

Barnsdall Oil Co.'s No. 3 J. G. McGrede, oil sand 3,588-94 feet, initial production 90 bbls. per hour on eleven-sixteenths-inch tubing choke, total depth 3,594 feet. Columbia Oil & Gas Co.'s No. 1 Arthur Christian, oil sand 3,554-87 feet, initial production 125 bbls. per hour through eleven-sixteenths-inch tubing choke, total depth 3,587 feet. Sun Oil Co.'s No. 1 M. C. Satterwhite, oil sand 3,542-87 feet, initial production 367 bbls. in three hours on eleven-sixteenths-inch choke, total depth 3,587 feet.

Cranfill & Reynolds' No. 1 Clayton heirs, top sand 3,517 feet, initial production 64 bbls. in 20 minutes through 1-inch tubing choke, total depth 3,557 feet. Prairie Oil & Gas Co.'s No. 1 Elder, top sand 3,505 feet, initial production 118 bbls. per hour through three-quarters-inch tubing choke, total depth 3,551 feet. Barnsdall Oil Co.'s No. 1 Smith, top sand 3,545 feet, initial production estimated 140 bbls. per hour through three-quarters-inch choke, total depth 3,569 feet. Byrd-Frost, Inc.'s No. 1 J. B. Watson, top sand 3,570 feet, initial production 183 bbls. in 15 minutes open through tubing, total depth 3,616 feet.

Harry Elliott's No. 3 Andrews, top sand 3,633 feet, initial production estimated 750 bbls. per hour through open casing, total depth 3,645 feet. Harry El-

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EAST CENTRAL TEXAS WILDCATS

Week Ended June 8

ANDERSON COUNTY

Company, well, farm name, section and block—	Remarks:
Riango Oil Co.'s No. 1 J. Lynn, 1,400 ft. from NE line and 7,425 ft. from E line of survey, R. Brown Sur.	Drlg. 350 ft.
H. B. McConnell et al's No. 1 N. B. Watson, 500 ft. from W line and 4,850 ft. from N of S line of survey in S half of 129-ac. tract, M. Main Sur.	Derrick.

ANGELINA COUNTY

R. O. Moore's No. 1 Abney Estate, 50 ft. N of Blk. No. 6, immediately out of city limits of Lufkin	T. D. 1,350 ft.; set 6⅝-in. csg.; bailed dry.
Pollick Oil Co.'s No. 1 Sessions, 1,250 ft. from N and 1,250 ft. from E line of Jesus De La Garza Sur.	Shut down 3,600 ft.

BOWIE COUNTY

Tom Bell's No. 1 Merritt, 1,225 ft. from N and 875 ft. from E line of survey, T. S. McKinney Sur.	Drlg. 2,550 ft.
Devore and Midfield's No. 1 Roy B. Cooper, 250 ft. from N and 250 ft. from E line of Cooper 115-ac. tract, W. M. Ward Sur.	Drlg. 1,950 ft.
Parkering-Jones et al's No. 1 W. W. Whybark, 200 ft. from S and W of SW cor. of J. A. Dyer Sur.	Derrick.
Lee Timberlake et al's No. 2 Julius N. Tidwell, 655 ft. from E and 2,510 ft. from S of survey in L. M. Rice Sur.	Salt water on drill stem test; shut down 3,000 ft.

CAMP COUNTY

W. E. Duke et al's No. 1 L. B. McCaslen, 2 miles NW of Lafayette, Mary Hays Sur.	Rig up.

CHEROKEE COUNTY

Ben Banner's No. 1 J. Williams Estate, 150 ft. S and 300 ft. W of SE cor. of the N. Hogg heirs and in the J. L. Hogg heirs Sur.	Drlg. 3,550 ft.
D. H. Byrd et al's No. 1 Dixie, 1,385 ft. from N along E line of G. W. Forman Sur. from NW cor. of W. H. Felder 854-ac. tract and 150 ft. W at right angles to E line	Drlg. 4,254 ft.
Grey et al's No. 1 McGee, 1,400 ft. from W and 200 ft. S of NE cor. of McKnight Sur.	Shut down 3,477 ft.
Helen-Clare Oil Co.'s No. 1 Mrs. M. P. Perkins, 1,800 ft. from N and 450 ft. from W of survey, Thomas Stafford Sur.	Rig up.
Rowan Nichols and Tidal Oil Co.'s No. 1 W. T. Norman, 330 ft. W of E line and 950 ft. N of S line, J. H. Irby Sur.	Drlg. 3,500 ft.
William A. Stone's No. 1 Blount Decker, 900 ft. E of E line of S. Selman Sur. and 1,200 ft. S of N line of E. M. Decker 406-ac. tract in George Ruddle Sur.	Drlg. 4,960 ft.
Walton Oil Co.'s No. 1 E. Singletary, 350 ft. W and 150 ft. N of NE cor. of M. Lacey Sur. and in Walters Sur. on Singletary 84-ac. tract	T. D. 2,960 ft.

DALLAS COUNTY

Paris' No. 1 Wilkinson, 2,787 ft. from NW and 3,241 ft. from SW of John P. Anderson Sur.	T. D. 870 ft.; shut down.

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Schleicher County Becomes Interesting

Test Standing With 3,500 Feet of Oil in the Hole, 1 Mile Northeast of Eldorado. Big Lake Well Increases When Deepened

By L. E. Bredberg
Fort Worth Bureau, The Oil and Gas Journal

FORT WORTH, Tex., June 8.—West Texas again felt the sting of East Texas' mounting production when the Humble Oil & Refining Co. posted a flat price of 25 cents for West Texas and Lea County, New Mexico, crude, following its previous order in East Texas withdrawing its postings in that district. The cut amounts to 10 cents per barrel in Crane-Upton Counties, Crockett, Ector, Howard and Glasscock Counties, and 15 cents in Pecos and Winkler Counties. The Texas Company and Gulf Pipe Line Co. met these prices in West Texas. Activities are decreasing gradually in this district, although Loving and Ward Counties are more active and have been more active during the past few weeks than they have been for many months.

Schleicher County is now the most interesting area in the West Texas district due to J. W. Wessner and others' No. 1 Nicks in Section 77, Block LL, T.C. Survey, 1 mile northeast of Eldorado, standing with about 3,500 feet of oil in the hole, which is coming from a pay horizon logged at 4,000 feet. An increase was encountered at 4,004-06 feet. Eight and a quarter-inch casing with a packer and perforated joint had been lowered to within 100 feet of the bottom, and the well swabbed some oil, water and b.s. into the pit on June 7. The packer is intended to shut off some salt water which is coming from around 3,900 feet. As soon as casing is set on bottom and further swabbings made, some idea of the test's possibilities will be known. It may not prove a commercial producer, but regardless of such a failure it brightens the prospects of Schleicher County's production possibilities, and adds to the several other good showings made in the county. Phillips Petroleum Co. and others' No. 1 Whitten near Eldorado was the last test drilled in the county to create considerabe interest by having encountered several good showings of oil.

Ector County

Penn Oil Co. and others' No. 1 Cowden in Section 12, Block 44, Township 2s, T.&P. Survey, approximately 9 miles north of the Penn Pool, Ector County, did not create any further interest this week as it continued drilling slightly below 4,300 feet in lime, having encountered no other showings of oil than mere rainbows reported last week.

Big Lake Producer

Big Lake Oil Co.'s No. 5-C University in the Big Lake Field is another deep producer which has been aided in production by deepening, and gains daily in production as does some of its predecessors. It is now standing at a total depth of 8,872 feet and made 4,172 bbls. during 23 hours ending at 7 a.m. June 4, and 4,208 bbls. the following day. Before deepening from 8,471 feet it was only making a little better than 2,100 bbls. per day, deepening aiding its production as more lime was drilled.

Crane-Upton Potential

Total daily average potential of the Crane-Upton areas for the period from June 1 to July 1 is placed at 51,068 bbls., coming from 594 wells. The outlet of the pools is placed at 18,445 bbls. This is a slight increase in potential over the past month's total of 50,640 bbls. last month from 597 wells.

COMPLETIONS IN WEST TEXAS

Howard County

American Maracaibo Oil Co.'s No. 5-C Settles, top pay 2,390 feet, initial production 962 bbls., total depth 2,447 fee. Magnolia Petroleum Co.'s No. 6 Hyman, top pay 1,608-20 feet, initial production 11 bbls., total depth 1,700 feet. Merrick and Lamb's No. 1 Chalk, top pay 1,721-40 feet, initial production 185 bbls., total depth 1,835 feet.

Irion County

Central Oil Co.'s No. 2 Horney, dry and abandoned, total depth 1,602 feet.

Loving County

West Texas Petroleum Corp.'s No. 2 Allen, top pay 4,298 feet, total depth 4,311 feet, plugged back to 4,304 feet, initial production 109 bbls. after 200-quart shot from 4,267-4,309 feet. Lockhart & Co.'s No. 1 Bell, top pay 4,226 feet, total depth 4,263 feet, plugged back to 4,262 feet, initial production 472 bbls. after 160-quart shot from 4,222-62 feet.

Ward County

Bell and Weir's No. 1 Boogher, top pay 2,187 feet, initial production 25 bbls., total depth 2,255 feet. Magnolia Petroleum Co.'s No. 1 Sealy (Atlantic), dry and abandoned, total depth 3,175 feet. R. F. Owens' No. 1 Johnson, dry and abandoned, total depth 5,005 feet. Peck and others' No. 1 Merritt, top pay 2,155 feet, initial production 30 bbls., total depth 2,220 feet. The California Co.'s No. 1 Gordon, top pay 2,445 feet, total depth 2,599 feet, plugged back to 2,445 feet, initial production 28 bbls.

WEST TEXAS PRODUCTION
Week Ending June 6

County—	Wells	Bbls.
Andrews	3	.....
Crane	377	18,361
Crockett	51	1,520
Ector	78	7,476
Fisher	11	679
Garza	2	19
Howard-Glasscock	539	29,209
Irion	9	49
Jones	81	1,305
Loving	39	3,389
Mitchell	111	2,014
Pecos	546	74,501
Reagan	255	19,166
Runnels	5	84
Scurry	5	.....
Upton	261	5,166
Taylor	3	100
Ward	59	3,552
Winkler	595	44,646
Total production this week		211,236
Total production last week		212,181
Decrease		945

COMPLETIONS IN NORTH CENTRAL TEXAS

Archer County

Kelly and others' No. 1 Churchwell, temporarily abandoned. Fain and McGaha's No. 1 Kard, dry and abandoned, total depth 1,981 feet. Lincoln and others' No. 1 Carr, temporarily abandoned, total depth 1,448 feet. Perkins and Cullum's No. 1 Falls, shot with 80 quarts from 1,112-22 feet, initial production 30 bbls., total depth 1,122 feet. Perkins and Cullum's No. 1 Falls "C," shot with 80 quarts from 1,156-74 feet, initial production 12 bbls., total depth 1,174 feet. Perkins and Cullum's No. 1 Falls "D," shot with 80 quarts from 1,150-64 feet, initial production 50 bbls., total depth 1,165 feet. Petroleum Production Co.'s No. 1 Predeaux, dry and abandoned, total depth 775 feet. Steele Drilling Co.'s No. 1 Lauster, dry and abandoned, total depth 1,410 feet.

Jack County

W. H. Hammon's No. 2 Booth, oil sand 2,743-52 feet, total depth 2,918 feet, plugged back to 2,762 feet, initial production 40 bbls.

Young County

F. H. E. Oil Co.'s No. 1 Routon, dry and abandoned, total depth 801 feet. T. F. Hunter's No. 1 Dietrick, dry and abandoned, total depth 1,175 feet. King Royalty Co.'s No. 15 Larimore, oil sand 706-25 feet, initial production 115 bbls., total depth 725 feet. Same company's No. 17 Larimore, oil sand 690-708 feet, initial production 150 bbls., total depth 708 feet. Same company's No. 19 Larimore, oil sand 687-711 feet, initial production 225 bbls., total depth 711½ feet. Same company's No. 20 Larimore, oil sand 698-718 feet, initial production 150 bbls., total depth 718 feet. Same company's No. 21 Larimore, oil sand 694-709½ feet, initial production 170 bbls., total depth 907½ feet. Same company's No. 22 Larimore, oil sand 697-712 feet, initial production 180 bbls., total depth 720 feet. Same company's No. 23 Larimore, oil sand 700-20 feet, initial production 225 bbls., total depth 720 feet. Same company's No. 24 Larimore, oil sand 700-23 feet, initial production 130 bbls., total depth 723 feet.

Knox and others' No. 1 Bernhardt, dry and abandoned, total depth 1,052 feet. Lurary and others' No. 1 Eddleman, dry and abandoned, total depth 1,341 feet. Moore and others' No. 1 Alsup, dry and abandoned, total depth 1,200 feet. E. C. Reed's No. 2 Tatum, oil sand 655-58½ feet, initial production 80 bbls., total depth 658½ feet. E. C. Reed's No. 3 Tatum, oil sand 659-62 feet, saturated

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WILDCAT OPERATIONS IN TEXAS PANHANDLE

Week Ending June 8

CARSON COUNTY

Company, well, farm name, section and block— Remarks:

Deep Lake Oil Co.'s No. 1 Keys, NE cor. SW, Sec. 1, Blk. 4, I.&G.N. Sur. — Drlg. 2,235 ft; cmtd. 8-in. csg. 2,181 ft; S.G. 2,230 ft.

El Paso-Amarillo O. & G. Co.'s No. 1 Chapman, 594 ft. S, 1,455 ft. E, Sec. 7, Blk. 3, A.B.&M. Sur. — Rig.

Interstate Prod. Co.'s No. 1 Selber, C NW, Sec. 10, Blk. 7, H.&G.N. Sur. — Location.

Red River Gas Co.'s No. 1-A Bennett, 660 ft. N, 660 ft. W, NW, Sec. 2, B.&B. Sur. — Rigging up.

CHILDRESS COUNTY

C. L. Sloan et al's No. 1 B. P. Smith, Sec. 49, F. P. Knott lands — T.D. 5,000 ft.

COLLINGSWORTH COUNTY

Dixon et al's No. 1 Bell, 330 ft. N, 1,320 ft. W, Sec. 102, Blk. 21, H.&G.N. Sur. — S.D. 1,992 ft; fishing.

COTTLE COUNTY

Darby Oil Co. and Merry Bros. & Perrin's No. 1 Richards, 330 ft. NE, Sec. 13, B.S.&F. Sur. — Drlg. 4,530 ft.

GRAY COUNTY

Anderson et al's No. 2 Vollmert, 330 ft. N and W, SW, Sec. 140, Blk. 3, I.&G.N. Sur. — Rig.

Boyles et al's No. 1 Colebank-Morse, 330 ft. NE, Sec. 65, Blk. 25, H.&G.N. Sur. — Spudded and S.D.

Brown et al's No. 1 Duncan, 330 ft. S and E, NW, Sec. 93, Blk. 3, I.&G.N. Sur. — S.D. 980 ft.

Cree Hoover & Traham's No. 1 Delmar, 330 ft. S line, 330 ft. W line, NW, Sec. 105, Blk. 3, I.&G.N. Sur. — Recmtd. pipe at 2,615 ft.

Danciger O. & R. Co.'s No. 1 Barrett, NW cor. S½ NE, Sec. 128, Blk. 3, I.&G.N. Sur. — T.D. 3,365 ft; plugged back 3,335 ft; top pay 3,175 ft; swbd. 60 bbls; to shoot.

Danciger O. & R. Co.'s No. 1-B Barrett, SW cor. N½ NE, Sec. 128, Blk. 3, I.&G.N. Sur. — Drlg. 3,075 ft.

Danciger O. & R. Co.'s No. 1 Barnett, 231 ft. S, 330 ft. W, E½ of N 56 ac., Sec. 136, Blk. 3, I.&G.N. Sur. — 5,000,000 ft. gas 3,097 ft; S.D. 3,180 ft.

Parton Holt and Shell Pet. Corp.'s No. 1 Morse, 330 ft. S and E, Sec. 6, Blk. 26, H.&G.N. Sur. — Location.

Jean Pet. Co.'s No. 1 Furneaux Bros., 330 ft. N and W, cor. SE, Sec. 200, Blk. B-2, H.&G.N. Sur. — S.D. 2,770 ft; P.B. 2,430 ft, and shot with 80 qts. 2,409-30 ft; C.O.

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WILDCAT OPERATIONS IN WEST TEXAS

Week Ended June 8

ANDREWS COUNTY

Company, well, farm name, section and block— Remarks—

Deep Rock Oil Co. et al's No. 1 Kuykendall, 2,310 ft. from N and E of SW cor. Sec. 24, School Blk. A-46 — Shut down; total depth 4,648 ft.; plugged back to 4,565 ft.

BREWSTER COUNTY

Brewster Oil Co.'s No. 1 fee, 2,640 ft. S and 2,598 ft. E of NW cor. Sec. 45, Blk. G-15, G.C.&S.F. Sur. — Shut down 1,935 ft.

E. L. Chapman's No. 1 Skinner, C SW SE Sec. 100, Blk. 2, G.C.&S.F. Sur. — Shut down 1,302 ft.

Trans-Pecos Oil & Gas Co.'s No. 1 Jones, 930 ft. from N and 2,500 ft. from E of Sec. 18, Blk. G-15, G.C.& S.F. Sur. — Shut down 2,820 ft.

Van McPhail's No. 1 McIntyre, SE cor. Sec. 59, Blk. 352, 7 miles south of Alpine — Shut down 1,750 ft.

COKE COUNTY

Reed, Hitchens et al's No. 1 Duncan, 1,980 ft. from S and 1,650 ft. from E of Sec. 239, Blk. 2, H.&T.C. Sur. (4,500-ft. cable test) — Shut down 30 ft.

CONCHO COUNTY

Beesley et al's No. 1 Waring Estate, 400 ft. from N and E Sec. 163, T.&N.O. Sur. — Shut down 267 ft.

Betts & Dennis' No. 1 H. E. Woods, 710 ft. from E and 150 ft. from S Sec. 3, H.E.&W.T. Sur. — Shut down 80 ft.

Turner et al's No. 1 Borsig, 150 ft. from S of NE cor. G. Emmig Sur. 130, 6 miles W of Paint Rock — Shut down 1,850 ft.

CRANE COUNTY

Cranfill Bros. and Gulf's No. 1 J. B. Tubb, 2,310 ft. from N and 330 ft. from E of Sec. 8, Blk. B-27, Public School Land — Total depth 5,336 ft.; drlg. on iron 4,303 ft.

E. H. Sides and others' No. 1 B. P. Nolen, 150 ft. from S and 150 ft. from W of N 160 acres, Sec. 8, Blk. 31, H.&T.C. Sur. — Top salt 760 ft.; elev. 2,365 ft.; drlg. 1,136 ft.

CROCKETT COUNTY

Doleman & Moore's No. 1 Perner, 3,125 ft. from N and 1,485 ft. from E of Sec. 36, Blk. 3, I.&G.N. Sur. — Spudded and shut down.

CULBERSON COUNTY

Kornrumpf et al's No. 1 Garren, 330 ft. S and W Sec. 15, Blk. 79, Public School Land — Shut down 1,280 ft.

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Electric Welded Pipe . . . Lapweld Casing
Line Pipe . . . . . Tubing . . . . Standard Pipe

Standard Seamless Tubular Goods

Rotary Drilling Machinery

Rotary Chain « « « « « «

Rotary Slips « « « « « «

Sucker and Pull Rods « «

Valves for Every Purpose

Rock Bits . . Core Bits . . Valves . . Tool Joints

« Asbesgraphite » Brake Blocks

Drilling Lines « « « « «

REPUBLIC
SPANG
Gumbo Buster
HOWE
MISSION
JONES
POWELL
HUGHES
GATKE
B&B Wire Rope

Republic Supply Company

OIL AND GAS WELL SUPPLIES
Cable and Rotary Tools

GENERAL OFFICES: HOUSTON, TEXAS

Pipe Line Construction News

LIBERTY AND PURE-VAN OUTLET FOR EAST TEXAS

HOUSTON, Tex., June 8.—Another major pipe line outlet for the Kilgore area of East Texas to Gulf Coast tidewater is to be provided at once by the Liberty Pipe Line Co. of this city through arrangements completed by that company with the Pure-Van Pipe Line Co.

The latter company operates a 10-inch trunk line from the Van Field of Van Zandt County to the terminal and refinery of the Pure Oil Co. at Smith's Bluff (Nederland), south of Beaumont, a distance of approximately 190 miles.

The Liberty Pipe Line Co. will utilize this line, making connection with it at Rusk Station, Henderson County, to which an 8-inch welded line will be laid immediately from Kilgore. This will require only approximately 45 miles of pipe. The Pure-Van line so far has served only the Van Field. Although passing comparatively close to the East Texas development no connection has been made with it.

The field terminus of the Liberty Pipe Line Co. will be on the Brightwell property of the Mills Bennett Production Co., with which company the Liberty Pipe Line Co. is affiliated. Mills Bennett Production Co., of which Mills Bennett of Houston is president, until recently has been exclusively a Gulf Coast operator, being one of the chief producers at Barbers Hills Dome and the owner of Allen Dome. Liberty Pipe Line Co. at one time operated a 4-inch line from the Liberty Field, through Barbers Hill, to a small loading terminal, from where crude could be barged to tank farms and terminals at Texas City. The company, however, two years ago sold the Barbers Hill section of the line to the Sun Pipe Line Co., and on January 1, 1931, sold the remainder of its line from Barbers Hill to Cedar Bayou and other holdings to the Atlantic Pipe Line Co. and since has been inactive.

SHAMROCK TO BUILD EAST TEXAS TO GULF

FORT WORTH, Tex., June 8.—Shamrock Pipe Line Co., subsidiary of Shamrock Oil & Gas Co., which is in turn allied with Spang, Chalfant & Co., has about completed preliminary contracts that will result in the company starting work shortly on about 200 miles of 12-inch welded line to extend from the East Texas district to tanker terminals on the Houston Ship Channel, near Houston. This proposed line will function strictly as a common carrier for more than a half dozen independent companies with large lease holdings in the East Texas productive area, with the financing and operation to be carried out by the Shamrock interests. Producing units in East Texas that have booked space in the line arranged for the disposal of 50,000 bbls. of oil daily upon delivery at the coastal terminal.

Six main line pumping stations are scheduled to be installed on the Shamrock Pipe Line Co.'s proposed line, and gathering lines will be built into all sections of the East Texas district because of the holdings of the various shippers being scattered.

It is reported that tentative agreements have been reached for the line to terminate at the American Petroleum Co.'s tank farm tanker terminals at Norsworthy station on the Houston Ship Channel. The latter is a subsidiary of the American Republics Corp., which also owns Republic Production Co., a large producer and lease owner in East Texas. American Petroleum Co. has eighteen 55,000-bbl. steel tanks in service at its Norsworthy station, and also a 5,000-bbl. daily capacity refinery.

General offices of the Shamrock Oil & Gas Co. are now located at Amarillo, but an office is to be located at Dallas shortly. The company is largely owned by Pittsburgh, Pa., interests. W. C. Fownes, Jr., Pittsburgh, is chairman of the board of directors, and John J. Sherrin, Amarillo, is president.

TO COMPLETE IRAQ LINES IN 1935 AT COST OF ABOUT $45,000,000

NEW YORK, June 8.—Iraq Petroleum Co., under the terms of its agreement with the Iraq government covering development work and construction of a pipe line to tidewater, has surrendered its rights to the proceeds of all sales on oil-bearing plots within its former concessionary area, and in return has received exclusive concessionary rights over that part of the provinces of Mosul and Bagdad lying east of the River Tigris, leaving the Iraq government free to offer concessions to any parties it deems desirable on areas west of the Tigris.

Under the terms of the agreement, the Iraq pipe line will start from Kirkuk, adjacent to the already developed Baba Gurgur oil field, and will run to Haditha, forking to Tripoli, via Palmyra, and to Haifa, via the Rutba wells and through Transjordania and Palestine, reaching the sea through the plain of Esdraelon.

The agreement calls for the completion of the two lines by 1935, both branches to be finished within six months of one another. The combined length of the two lines will be approximately 1,200 miles, and it is expected that their construction will involve an outlay of approximately $45,000,000.

H. S. Austin, president of the Ajax Pipe Line Co. (Standard Oil Co. of New Jersey), will have charge of the construction work. Mr. Austin is the representative of the American companies interested in Iraq Petroleum Co., the American group comprising Standard Oil Co. (New Jersey), Standard Oil Co. of New York, Atlantic Refining Co., Gulf Oil Corp. and Pan American Petroleum & Transport Co., which jointly hold 23¾ per cent of Iraq Petroleum Co.

Construction of the line will require approximately 500,000 tons of pipe, and the combined lines will have aggregate annual capacity for the transportation of 4,000,000 tons of crude.

Iraq Petroleum has inaugurated the payment of $1,800,000 annually to the Iraq government for royalties, etc., the government granting the company freedom from taxation on its operations. The Iraq Petroleum Co. concession runs until 1995, after which time the properties and pipe line will become the sole property of the Iraq government.

The route of the desert pipe line system, as finally decided upon, is illustrated in the accompanying chart.

Map of Iraq lines.

PIPE DEMAND STILL AT SLIGHTLY HIGHER RATE

By B. E. V. Luty

PITTSBURGH, Pa., June 8.—Mills are making some pipe about which they are unwilling to give details, as buyers sometimes require secrecy for a time. An order is being executed at Youngstown for 60 miles of 10-inch. The Memphis Natural Gas Co. has ordered something over 100 miles of 8-inch seamless, about 6,000 tons, from National Tube Co. Lycoming Natural Gas Co. is inquiring for somewhat under 100 miles of 20-inch for a gas line intended to run from Pennsylvania into New York State.

There is a rumor that line pipe prices are going to be "stabilized." This would be difficult, for in the old days when there was nothing but fire weld line pipe it was the regular thing for large lots to be bid upon in a competitive way whereby successive orders went around the circle. Now there is much sharper competition, all steel demand being so low, and there are two additional kinds of line pipe, seamless and electric weld.

Demand for standard pipe holds to the slightly increased rate developed a fortnight and more ago. Prices are understood to be steady. There has been no question about prices on pipe for jobbers' stocks, but on car loads for direct shipment there was such shading that a month ago an extra 5 per cent was quoted and as noted a week ago this had been changed to 2½ per cent, at which the market is steady.

TEXAS PIPE LINE RATES

AUSTIN, Tex., June 8.—The Railroad Commission has postponed without date its hearing, originally scheduled for June 11, on complaint of the Independent Petroleum Association of Texas for reduction of oil pipe line rates throughout Texas to at least 50 per cent below the present rates. The virtual indefinite postponement of the case was by agreement of officials of the Independent Petroleum Association, state officials said.

SURVEYING NEW ROUTE FOR LYCOMING LINE

SYRACUSE, N. Y., June 8.—Beginning of construction of the 110-mile natural gas line from Tioga, Pa., to Syracuse, has been delayed because of the necessity for the selection of an entirely new route from Freeville, Tompkins County, to Syracuse.

Difficulty in obtaining rights of way on the route surveyed from Freeville to Syracuse, approximately 50 miles, caused the change in the plans of the Lycoming Natural Gas Co., a subsidiary of the Standard Oil Co. of New Jersey.

The pipe line will reach Syracuse from the west or southwest instead of the south as originally planned. Present plans of the company do not provide for the laying of pipes in the city.

What is to be done about distributing the gas after it has been delivered to the Syracuse city line has not been divulged by officials of the Lycoming, although Christy Payne, Jr., son of the head of all the natural gas companies of the Standard Oil Co. of New Jersey, has taken up his residence in Syracuse for the purpose of making the arrangements for distributing the product.

Large industrial plants here have been approached and offered gas at low prices for the operation of their enterprises, but no contracts have been submitted. Assurances have been given Mr. Payne, however, that there will be ample market here for the gas whenever it is available. Mr. Payne this week visited Ithaca and Cortland in connection with the plans of the company for marketing the gas.

Officials of the Lycoming company say that they expect to have the pipe line completed before the end of the year despite the setback occasioned by the change in route of a large portion of the line. Latest statistics from the gas field show that the Lycoming controls wells with a shut-in potential flow of approximately 300,000,000 feet a day. New wells are being drilled at various points.

Officials of the Niagara Hudson Power Corp. and the Syracuse Lighting Co., Inc., are continuing to give consideration to the possibilities of using natural gas in mixture with manufactured gas when the Lycoming pipe line has been completed. It was officially stated that no negotiations have yet been started between the Niagara Hudson and the Lycoming concern.

Once the gas is brought to the city line it is considered likely a contract will be entered into between the Lycoming and the Niagara Hudson for supplying not only Syracuse but perhaps other points in the State reached by the Niagara Hudson system.

AMARILLO GAS COMPANY BUYS HUBER PIPE LINE

AMARILLO, Tex., June 6.—Amarillo's gas fight came to an unexpected end today when a compromise settlement was made with the Amarillo Gas Co. Under terms of the settlement, the city is to withdraw its condemnation suit to acquire the local plant, the gas company agreed to a 27-cent maximum rate and to make the new rate schedule a part of its franchise and is to relieve the city of contracts which had been made for a gas supply and for the sale of bonds to finance a city-owned plant.

The gas company purchased the Huber Petroleum Co.'s pipe line through which the city was securing its supply and made a settlement with brokerage houses which had contracted to buy up $1,600,000 of industrial bonds from the city.

The new rate schedule gives Amarillo gas from 27 cents to 8 cents.

PLUS

A WINCH

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FIFTEEN . . .	$1450	THIRTY . . .	$2375
SIXTY	$4175		

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TRACTOR

Government Not to Appeal Merger

Department of Justice Drops Opposition to Proposed Consolidation of Standard of New York and Vacuum Companies

By C. O. Willson

The final legal obstacle in the merger plans of the Standard Oil Co. of New York and the Vacuum Oil Co. was removed the past week when the Department of Justice at Washington, D. C., announced that the recent decision of the federal circuit court at Omaha, Nebr., which was favorable to the merger, would not be appealed to the United States Supreme Court.

In oil circles, the announcement was considered significant not only because it makes possible the merger of two major units of the oil industry but also because it paves the way for additional consolidations. Several of the remaining Standard units are mentioned as probable participants in future mergers involving conditions similar to those existing in the case of the Standard of New York and Vacuum companies, which the circuit court held were not a violation of the Standard dissolution decree of 1911 or the Sherman antitrust law. Some of the larger independent companies are also known to be considering merger plans.

Government Announcement

The Department of Justice in announcing that it would not appeal the circuit court decision issued the following statement:

"The issues raised in this proceeding were tried before a specially constituted court consisting of three circuit judges, who after consideration of the evidence taken before a special master unanimously concluded that the proposed merger was not induced by any motive or purpose to monopolize commerce but by legitimate business reasons alone, that it will not be an undue or unreasonable restraint of interstate commerce or monopolization thereof, and that it will not have the necessary and inevitable tendency to produce either of these results.

"These conclusions were based upon specific findings relative to the legitimate business reasons for the merger of the two companies, and the competitive conditions which the new company will confront if the merger is consummated. Upon consideration of all of the relevant facts the court concluded that the merger will not prejudice the public interests nor injuriously affect the public.

"The controlling facts which establish the propriety and validity of the merger as a legitimate business arrangement of importance to the companies concerned have thus been judicially determined upon evidence sufficient to support the conclusion. In the supreme court the facts found in the lower court would undoubtedly be accepted as established by the evidence. It has been determined that the Government is not justified in prolonging this litigation by a futile appeal to the Supreme Court of the United States."

The case which was decided by the lower court on February 7 involved the question of violation of the decree of 1909-11 which dissolved the Standard Oil of New Jersey and forbade its component companies, including the Standard Oil of New York and Vacuum, to form a new combination in restraint of trade.

The Government, through an injunction, sought to halt the merger on the ground that such a combination would be in restraint of trade. A large amount of testimony offered by the Government and the two companies was given at the hearings.

In dismissing the injunction plea of the Government and upholding the merger, the three judges in circuit court said that the decree of 1909-11 was meant to prohibit only a merger which will be actually violate to the law against combinations in restraint of trade. It was also declared that the question of intent must also be considered, and added that no intent on the part of the Standard Oil and the Vacuum to form a combination in restraint of trade has been shown in the hearings.

Plans Not Known

Officials of the two companies involved have not announced the next step in the plans to merge the properties. Since the merger was first announced in February, 1930, conditions in the oil industry and in the operations of the two companies have changed and in financial circles it is believed that important adjustments will have to be made in the original plans before the approval of the stockholders of the two companies can be secured. This situation, it is declared, may mean an indefinite postponement.

The merger as originally announced called for the organization of the General Petroleum Corp., which would take over the stock of the Vacuum on basis of one share of the Vacuum for three of the new corporation. In the case of the Standard of New York there was to be an even exchange. At that time, the Standard stock was selling around 30 and the Vacuum at 90. Since that time there has been a greater drop in the Vacuum stock than in the case of the Standard company. Vacuum has been selling around 30 and the Standard 15, leading to the report that the merger would be consummated on a two-to-one basis rather than three to one. No statement has been made by officials of the two companies.

Major Companies

The Standard of New York and Vacuum Oil Co., if finally merged, will join two companies whose separate operations cover a wide area in the United States with extensive holdings in foreign countries. The merged companies would be third largest of the petroleum industry. At the first of the year, the book value of the New York Standard's holdings was $578,581,047 and that of the Vacuum company, $218,245,213.

The operations of the New York Standard, after the dissolution, were largely confined to marketing in New York and the New England states and foreign countries. Operations have been rapidly expanded in recent years through the acquisition of important subsidiary interests. The three major subsidiaries are the Magnolia Petroleum Co., a large integrated unit of the Mid-Continent; the General Petroleum Co., one of the largest companies on the West Coast, and the White Eagle Oil Corp., an independent refining and marketing unit operating in the Southwest, Middle West and the Rocky Mountain areas.

The activities of the Vacuum company for years centered in the manufacture and marketing of all types and grades of lubricating oils. A world-wide distribution for these products was developed. In recent years, the company has acquired controlling interest in a number of independent refining and jobbing companies. Twenty-seven of these companies were acquired in 1930. The company has also extended its operations in the production end. Recently the company through subsidiaries has been engaged in refinery construction in Australia and France. Through subsidiary or affiliated interests, the company has other extensive holdings in foreign countries.

A. G. Maguire

The company has strongly entrenched its position in the Middle West over the past two years by obtaining a controlling stock interest in the Lubrite Refining Co., St. Louis, Mo.; Wadhams Oil Co. and Bartles-Maguire Oil Co., Milwaukee, Wis., and the White Star Refining Co., Detroit, Mich. These three companies operate refineries and have a large number of bulk stations and service stations.

Two New Directors

At a meeting last week, A. G. Maguire, chairman of the board of directors of the Wadhams Oil Corp., and H. B. Earhart, president of the White Star Refining Co., were elected to the board of directors of the Vacuum Oil Co. Both directors have been actively engaged in the oil business for many years.

Before entering the oil business Mr. Maguire was assistant general freight agent of the Great Northern Railway Co. at St. Paul. He entered the jobbing business in 1909 under the name of the Bartles-Maguire Oil Co. He was president of this company with headquarters

(Continued on Page 48)

REFINING PROPERTIES IN THE UNITED STATES

Refineries in United States involved in the proposed merger of the Standard Oil Co. of New York and the Vacuum Oil Co.

Standard Oil Co. of New York

Standard Oil Co. of New York, N. Y., N. Y.: Plant location—	Crude oil Capacity	Cracking Capacity
Brooklyn, N. Y.	19,000	8,000
Buffalo, N Y.	5,000	2,000
Providence, R. I.	10,000	6,000
Total	34,000	16,000
Magnolia Petroleum Co., Dallas, Tex.: Plant location—		
Beaumont, Tex.	70,000	55,000
Magpetco, Tex.	10,000	.....
Fort Worth, Tex.	4,500	3,000
Fort Worth, Tex.	2,600	750
Corsicana, Tex.	4,000	.....
Luling, Tex.	5,000	3,750
Total	96,100	62,500
General Petroleum Corp., Los Angeles, Calif.: Plant location—		
Vernon, Calif.	50,000	.....
Torrance, Calif.	35,000	.....
Olinda, Calif.	2,000	.....
Lebec, Calif. (shut down)	12,000	.....
Total	99,000	.....
White Eagle Oil Corp., Kansas City, Mo.: Plant location—		
Augusta, Kans.	10,000	8,000
Casper, Wyo.	4,500	4,500
Total	14,500	12,500

Vacuum Oil Co.

Vacuum Oil Co., New York, N. Y.: Plant location—	Crude oil Capacity	Cracking Capacity
Paulsboro, N. J.	20,000	9,000
Olean, N. Y.	6,500	3,000
Total	26,500	12,000
Lubrite Refining Co., St. Louis, Mo.: Plant location—		
East St. Louis, Ill.	3,500	3,000
White Star Refining Co., Detroit, Mich.: Plant location—		
Wood River, Ill.	5,500	3,100
Trenton, Mich.	6,600	3,900
Total	12,100	7,000
Wadhams Oil Corp., Milwaukee, Wis.: Plant location—		
East Chicago, Ind.	5,000	5,000
Grand total	290,700	118,000

EAST CENTRAL TEXAS

(Continued from Page 41)

liott's No. 1 Godfrey, top sand 3,576 feet, initial production 800 bbls. per hour through casing, total depth 3,595 feet. Humble Oil & Refining Co.'s No. 2 Knowles, top sand 3,554-3,620 feet, initial production 90 bbls. per hour through 1-inch tubing choke, total depth 3,623 feet. Mullendore and Berry's No. 1 W. W. Elder, top sand 3,570 feet, initial production 315 bbls. in 15 minutes wide open, total depth 3,592 feet. Magnolia Petroleum Co.'s No. 1 Griffin Davis, top sand 3,652 feet, initial production 85 bbls. in 15 minutes through open tubing, total depth 3,654 feet.

Shell Petroleum Corp.'s No. 2 J. A. Knowles, top sand 3,646 feet, initial production 124 bbls. per hour through three-fourths-inch tubing choke, total depth 3,658 feet. Wise & Jackson's No. 1 F. J. Glover, abandoned location. Mid-Kansas Oil & Gas Co.'s No. 1 Bivens, top sand 3,611 feet, initial production 200 bbls. per hour through open tubing, total depth 3,675 feet. Oliphant's No. 1 Godfrey, top sand 3,552 feet, initial production 220 bbls. in 15 minutes open through casing, total depth 3,585 feet. Shell Petroleum Corp.'s No. 1 M. H. Bivens, top sand 3,543 feet, initial production 225 bbls. per hour through open tubing, total depth 3,595 feet. Shell Petroleum Corp.'s No. 1 Houston Neal, top sand 3,537 feet, initial production 112 bbls. per hour through three-fourths-inch tubing choke, total depth 3,584 feet.

Tidal Oil Co.'s No. 3 Bean, sand 3,585-3,647 feet, initial production 630 bbls. per hour open, total depth 3,648 feet. Weaver-Crim's No. 4 Laird, top sand 3,551 feet, initial production 250 bbls. per hour through open tubing, total depth 3,597 feet. Gulf Production Co.'s No. 2 Muckleroy, top sand 3,540 feet, initial production 147 bbls. per hour through three-fourths-inch tubing choke, total depth 3,558 feet. Gulf Production Co.'s No. 2 Ben Watson, top sand 3,558 feet, initial production 118 bbls. per hour through three-fourths-inch tubing choke, total depth 3,576 feet. Hudson & Hawkeye, top sand 3,585 feet, initial production estimated 120 bbls. per hour through three-fourths-inch tubing choke, total depth 3,609 feet. Shell Petroleum Corp.'s No. 1 W. W. Elder, top sand 3,550 feet, initial production 124 bbls. per hour through three-fourths-inch tubing choke, total depth 3,580 feet.

Whittle & Caranough's No. 2 J. B. Watson, top sand 3,583 feet, initial production estimated 135 bbls. per hour through three-fourths-inch tubing choke, total depth 3,583 feet. Selby Oil & Gas Co.'s No. 1 H. R. Snavely, oil sand 3,558-64 feet, 3,570-73 feet and 3,592-95 feet, initial production 913 bbls. per hour open flow, total depth 3,595 feet. O. L. Hickman's No. 1 C. R. Moore, oil sand 3,530-34 feet, 3,550-66 feet, initial production 75 bbls. per hour on one-half-inch tubing choke, total depth 3,566 feet. Gulf Production Co.'s No. 1 M. O. Shepherd, oil sand 3,545-54 feet, initial production 60 bbls. per hour on eleven-sixteenths-inch tubing choke, total depth 3,554 feet.

Humble Oil & Refining Co.'s No. 1 A. Carter, oil sand 3,585-90 feet, broken sand 3,590-95 feet, oil sand 3,607-95 feet, initial production 170 bbls. per hour on eleven-sixteenths-inch tubing choke, total depth 3,633 feet. Sinclair Oil & Gas Co.'s No. 3 M. T. Cole, top sand 3,554 feet, initial production 205 bbls. per hour through open tubing, total depth 3,564 feet.

Rusk County

E. L. Chapman's No. 1 Finney, top Pecan Gap 2,549 feet, base Pecan Gap 3,002 feet, top Austin 3,396 feet, base Austin 3,539 feet, sand 3,561-72 feet, initial production 10 bbls. first 15 hours by heads through tubing, total depth 3,614 feet. Gulf Production Co.'s No. 1 William Stone, top Pecan Gap 2,800 feet, base Pecan Gap 3,216 feet, sand 3,816-22 feet, initial production 150 bbls. per hour open through tubing, total depth 3,822 feet. Snetcher and Pittman's No. 2 Cox, top Pecan Gap 2,680 feet, base Pecan Gap 3,110 feet, top Austin 3,538 feet, base Austin 3,580 feet, sand 3,728-42 feet, initial production 308 bbls. per hour through casing, total depth 3,780 feet.

Tidal Oil Co.'s No. 1 Hale, top Pecan Gap 2,601 feet, base Pecan Gap 3,015 feet, top Austin 3,544 feet, base Austin 3,575 feet, sand 3,575-3,600 feet, initial production 138 bbls. per hour through tubing, total depth 3,667 feet. Bass and others' No. 1 Alford, top Pecan Gap 2,750 feet, base Pecan Gap 3,160 feet, top Austin chalk 3,643 feet, base Austin chalk 3,737 feet, sand 3,737-80 feet, initial production 150 bbls. per hour through tubing, total depth 3,780 feet. Gulf Production Co.'s No. 1-A Keeling, top Pecan Gap 2,742 feet, base Pecan gap 3,175 feet, top Austin chalk 3,418 feet, base Austin chalk 3,711 feet, sand 3,752-76 feet, initial production 97 bbls. per hour open through tubing, total depth 3,776 feet.

Gulf Production Co.'s No. 4 Thrash, top Pecan Gap 2,720 feet, base Pecan Gap, 3,140 feet, top Austin chalk 3,585 feet, base Austin chalk 3,734 feet, sand 3,739-59 feet, initial production 115 bbls. per hour through tubing, total depth 3,759 feet. Humble Oil & Refining Co.'s No. 1 Walker, top Pecan Gap 2,706 feet, base Pecan Gap 3,078 feet, top Austin chalk 3,515 feet, base Austin chalk 3,601 feet, sand 3,676-3,700 feet, initial production 125 bbls. first hour through eleven-fifteenths-inch choke on tubing, total depth 3,700 feet. Vitex's No. 2 Eaton, top Pecan Gap 2,699 feet, base Pecan Gap 3,102 feet, top Austin chalk 3,641 feet, base Austin chalk 3,714 feet, sand 3,714-29 feet, initial production 230 bbls. per hour choked through tubing, total depth 3,729 feet. Owenwood's No. 1 Mullins, top Pecan Gap 2,756 feet, base Pecan Gap 3,155 feet, top Austin chalk 3,653 feet, base Austin chalk 3,768 feet, sand 3,768-94 feet, initial production 192 bbls. per hour through open tubing, total depth 3,794 feet. Grady Vaughn's No. 1 Alford, location abandoned.

British-American's No. 2 Kangerga, top Pecan Gap 2,640 feet, base Pecan Gap 3,030 feet, top Austin chalk 3,464 feet, base Austin chalk 3,612 feet, sand 3,614-61 feet, initial production 100 bbls. first 30 minutes through tubing, total depth 3,661 feet. Edwards and Hall's No. 1 Thrash, top Pecan Gap 2,760 feet, base Pecan Gap 3,100 feet, top Austin chalk 3,462 feet, top sand 3,662 feet, initial production 62 bbls. per hour through open tubing, total depth 3,747 feet. Golding's No. 2 Thompson, top Pecan Gap 2,690 feet, base Pecan Gap 3,058 feet, top Austin chalk 3,515 feet, base Austin chalk 3,645 feet, sand 3,685-3,710 feet. initial production 120 bbls. per hour through tubing, total depth 3,710 feet.

Golding and Murchison's No. 1 Young, top Pecan Gap 2,708 feet, base Pecan Gap 3,180 feet, top Austin chalk 3,596 feet, base Austin chalk 3,654 feet, sand 3,654-3,727 feet, initial production 100 bbls. per hour through open tubing, total depth 3,727 feet. Judd and others' No. 1 Giles, top Pecan Gap 2,675 feet, base Pecan Gap 3,010 feet, top Austin chalk 3,590 feet, base Austin chalk 3,657 feet, initial production 84 bbls. per hour through open casing, total depth 3,748 feet. Kirby's No. 1 Samp Stone, top Pecan Gap 2,655 feet, base Pecan Gap 3,070 feet, top Austin chalk 3,429 feet. base Austin chalk 3,558 feet, sand 3,648-55 feet, initial production 211 bbls. per hour through tubing, total depth 3,655 feet.

G. B. Mitchell and others' No. 1 Ras Pool, top Pecan Gap 2,681 feet, base Pecan Gap 3,030 feet, top Austin chalk 3,498 feet, base Austin chalk 3,668 feet, sand 3,671-3,714 feet, initial production 640 bbls. per hour through open casing, total depth 3,724 feet. Phillips Petroleum Co.'s No. 1 Wilson, top Pecan Gap 2,627 feet, base Pecan Gap 3,053 feet, top Austin chalk 3,475 feet, base Austin chalk 3,630 feet, sand 3,633-80 feet, initial production 850 bbls. per hour through tubing, total depth 3,680 feet. Ray Drilling Co.'s No. 2 Wilson, top Pecan Gap 2,641 feet, base Pecan Gap 2,980 feet, top Austin chalk 3,496 feet, base Austin chalk 3,551 feet, sand 3,618-45 feet, initial production 125 bbls. per hour through open tubing, total depth 3,645 feet. Tulsa Oil Co.'s No. 2 Kangerga, top Pecan Gap 2,723 feet, base Pecan Gap 3,068 feet, top Austin chalk 3,512 feet, base Austin chalk 3,552 feet, top sand 3,677-3,718 feet, initial production 151 bbls. per hour through tubing, total depth 3,718 feet.

Turman's No. 6 Deason, top Pecan Gap 2,680 feet, base Pecan Gap 3,090 feet, top Austin chalk 3,520 feet, base Austin chalk 3,676 feet, and 3,676-93 feet. initial production 500 bbls. first 12 hours open through tubing, total depth 3,703 feet. British-American's No. 1 Kangerga, top Pecan Gap 2,664 feet, base Pecan Gap 3,000 feet, top Austin chalk 3,449 feet, base Austin chalk 3,622 feet, sand 3,622-43 feet, initial production 65 bbls. first 15 minutes through tubing, total depth 3,643 feet. Golding and Murchison, top Pecan Gap 2,700 feet, base Pecan Gap 3,052 feet, top Austin chalk 3,494 feet, base Austin chalk 3,660 feet, sand 3,660-97 feet, initial production 150 bbls. per hour through tubing, total depth 3,699 feet.

Southern Interstate Oil Co.'s No. 1 Giles, top Pecan Gap 2,724 feet, base Pecan Gap 3,068 feet, top Austin chalk 3,473 feet, sand 3,665-3,714 feet, initial production 63 bbls. first hour and 15 minutes through tubing, total depth 3,714 feet. Turman's No. 3 Young, top Pecan Gap 2,675 feet, base Pecan Gap 3,115 feet, top Austin chalk 3,505 feet, base Austin chalk 3,545 feet, sand 3,671-3,705 feet, initial production 633 bbls. first 13 hours through tubing, total depth 3,705 feet. Gulf Coast Oil Co.'s No. 1 Giles, sand 3,701-24 feet, initial production 3,000 bbls. first 24 hours through tubing, total depth 3,759 feet.

Luling Oil & Gas Co.'s No. 1 Frederick, top Pecan Gap 2,534 feet, base Pecan Gap 2,938 feet, top Austin chalk 3,450 feet, base Austin chalk 3,454 feet, top Georgetown lime 3,685-3,714 feet, initial production 450 bbls. per day through tubing, total depth 3,714 feet. Consoljdated Oil Co.'s No. 4 Jobe, top Pecan Gap 2,538 feet, base Pecan Gap 3,025 feet, top Austin chalk 3,380 feet, base Austin chalk 3,465 feet, sand and shale 3,593-3,665 feet, initial production 330 bbls. first 24 hours pumping, total depth 3,677 feet. Alf Tillman Oil Co.'s No. 1 Bradford, location abandoned.

East Texas Refining Co.'s No. 7 D. Willis, top sand 3,656 feet, initial production 490 bbls. per hour through tubing and casing open, total depth 3,671 feet. Gulf Production Co.'s No. 1 Rosa Russell, top sand 3,584 feet, initial production 103 bbls. per hour through three-quarters-inch choke, total depth 3,609 feet. Gulf-Smith's No. 6 Peterson, top sand 3,619 feet, initial production 103 bbls. per hour through three-quarters-inch tubing choke, total depth 3,631 feet.

Humble Oil & Refining Co.'s No. 21 Crim, top sand 3,620 feet, initial production 50 bbls. per hour through three-quarters-inch tubing choke, total depth 3,660 feet. Same company's No. 6-A S. S. Laird, top sand 3,596 feet, initial production 79 bbls. per hour through eleven-sixteenths-inch tubing choke, total depth 3,665 feet. Same company's No. 7-A S. S. Laird, top sand 3,609 feet, initial production 59 bbls. per hour through eleven-sixteenths-inch tubing choke, total depth 3,692 feet. Charles McMahon's No. 2 D. Wills, top sand 3,625 feet, initial production estimated 90 bbls. per hour through three-quarters-inch choke, total depth 3,645 feet. Stanolind Oil & Gas Co.'s No. 5 Ben Laird, top sand 3,678 feet, initial production 71 bbls. per hour through three-quarters-inch tubing choke, total depth 3,744 feet.

Westheimer's No. 1 Brightwell, initial

LARGE INCREASE IN DRILLING WELLS AND RIGS DURING MAY

There were 38 fewer completions in the fields east of California in May compared with the April field results, but at the close of May there were 88 more rigs up and 298 more wells drilling than at the close of April.

A change in the manner of computing initial production in the East Texas Field was the cause of the large decrease in total initial production shown in the report.

Since the development of the super fields of Texas and Oklahoma initial production has ceased to convey the true picture of field conditions it once did. There has been no uniform way of computing initial production. In some fields it has been based on estimated "potential" initial production, reckoned from a brief period the wells were permitted to produce on their initial day. In other fields only the actual gauge, however brief it may have been, has been given as the initial production. In the accompanying report for East Texas the latter method was used, but in April and previously, "potential" initial production was given. There has been no way The Oil and Gas Journal could correct this, as the figures we have given in the monthly production reports were those made up in the field by men appointed to do so by operators in the field. However, it is believed that beginning with this report a uniform way of computing initial production based on actual production on the first day will be adhered to.

Following is a summary of the month's field work:

SUMMARY OF ALL FIELDS

	Wells Completed			
	Comp.	Prod.	Dry	Gas
Eastern	127	376	17	62
Central Ohio	49	359	10	31
Lima	10	107	2	5
Indiana	16	625	10	4
Michigan	9	601	6	1
Kentucky	18	660	8	5
Illinois	3	0	3	0
Tennessee	3	0	0	3
Kansas	41	13,569	14	8
Oklahoma	65	34,742	36	12
North Central Tex.	112	3,660	70	17
East Central Texas	286	116,183	31	0
E. Tex. Gas Field	3	0	3	0
West Texas	28	4,562	14	0
Texas Panhandle	23	1,695	1	12
Gulf Coast	81	25,513	41	1
Southwest Texas	64	1,852	45	6
North Louisiana	25	2,553	11	9
Arkansas	8	250	7	0
Mississippi	7	0	6	1
Montana	4	21	2	1
Wyoming	4	150	3	0
Colorado	0	0	0	0
New Mexico	2	0	2	0
Utah	1	0	1	0
Total May	991	227,478	342	178
Total April	1,029	1,666,284	375	152
Difference	38	1,438,806	33	26

Note—A change in the method of accounting for initial production in the East Texas Field is responsible for the large decrease in the figures in the initial production column. Up to May initial production in East Texas was based on estimated potential initial production, reckoned from the short time actual production period. In May it was decided in the field to give only the actual production made on the first day of each well, resulting in a total of only a fraction of what the potential would have been. This method will be continued. It is the same as the method used in the Oklahoma City Field in Oklahoma.

RIGS AND WELLS DRILLING

	Rigs	Drlg.	Ttl.
Eastern	34	142	176
Central Ohio	26	105	131
Lima	5	19	24
Indiana	3	51	54
Michigan	63	103	166
Kentucky	12	98	110
Missouri	0	1	1
Tennessee	0	15	15
Illinois	3	21	24
Kansas	37	128	165
Oklahoma	69	306	375
North Central Texas	26	152	178
East Central Texas	150	554	704
East Texas Gas Field	17	39	56
West Texas	15	112	127
Panhandle Texas	21	36	57
Gulf Coast	9	105	114
Southwest Texas	16	103	121
North Louisiana	20	60	80
Arkansas	6	31	37
Mississippi	5	13	18
Alabama	2	3	5
Montana	10	66	76
Wyoming	13	83	96
Colorado	12	68	80
New Mexico	4	44	48
Utah	1	19	20
Total May	579	2,477	3,056
Total April	491	2,179	2,670
Difference	88	298	386

production 170 bbls. per hour through three-quarters-inch tubing choke, total depth 3,606 feet. Hunt's No. 1 Russell, top Pecan Gap 2,675 feet, base Pecan Gap 3,063 feet, top Austin chalk 3,572 feet, base Austin chalk 3,742 feet, sand 3,742-80 feet, initial production 205 bbls. first hour open through tubing, total depth 3,780 feet. Humble Oil & Refining Co.'s No. 1 Wilson, top Pecan Gap 2,679 feet, base Pecan Gap 3,083 feet, top Austin chalk 3,517 feet, base Austin chalk 3,688 feet, sand 3,688-3,708 feet, initial production 115 bbls. per hour through three-quarters-inch tubing choke, total depth 3,708 feet.

East Texas Refining Co.'s No. 1 Givens top sand 3,621 feet, initial production 450 bbls. per hour through open tubing, total depth 3,648 feet. Houston-Smith's No. 2 N. & C. Bean, top sand 3,577 feet, base sand 3,586 feet, initial production 115 bbls. per hour through 1-inch tubing choke, total depth 3,612 feet. Houston Oil Co.'s No. 2 Wells, top sand 3,683 feet, initial production 97 bbls. per hour through 1-inch tubing choke, total depth 3,718 feet. Humble Oil & Refining Co.'s No. 3-B B. F. Laird, top pay 3,687 feet, initial production 92 bbls. per hour through eleven-sixteenths-inch tubing choke, total depth 3,716 feet. Humble Oil & Refining Co.'s No. 1 W. P. Moore, top sand 3,645 feet, initial production 148 bbls. per hour through 1-inch tubing choke, total depth 3,659 feet. E. M. Jones and Houston Oil Co.'s No. 2 B. F. Hindman, top sand 3,664 feet, initial production 139 bbls. per hour through eleven-sixteenths-inch tubing choke, total depth 3,678 feet.

Rusk County

Mid-Kansas Oil & Gas Co.'s No. 1 W. P. Moore, top sand 3,644 feet, initial production 130 bbls. per hour through three-quarter inch tubing choke, total depth 3,649 feet. Olvey's No. 1 C. Bean, sand 3,665-3700 feet, initial production 128 bbls. per hour through open tubing, total depth 3,710 feet. Stanolind Oil & Gas Co.'s No. 2 Powers, top sand 3,660 feet, initial production 189 bbls. per hour through 1½-inch tubing choke, total depth 3,667 feet. Cordova Union Oil Corp.'s No. 1 J. S. Bean, top sand 3,637 feet, initial production 110 bbls. per hour through three-quarter inch tubing choke, total depth 3,691 feet. Gulf Coast Oil Co.'s No. 5 Brightwell, top sand 3,593 feet, initial production 462 bbls. per hour through open tubing and casing, total depth 3,630 feet.

Humble Oil & Refining Co.'s No. 23 Crim, top sand 3,644 feet, initial production 55 bbls. per hour through three-quarter inch tubing choke, total depth 3,686 feet. Lewis Production Co.'s No. 2 D. M. Peterson, top sand 3,606 feet, initial production 226 bbls. per hour in 30 minutes through one 4-inch line on casing, no tubing, total depth 3,638 feet. Navarro Oil Co.'s No. 2 J. M. Peterson, top sand 3,624 feet, initial production 152 bbls. per hour through three-quarter inch tubing choke, total depth 3,663 feet. Sun Oil Co.'s No. 1 A. A. King, abandoned location. Marine Oil Co.'s No. 4 Nat Bean, top sand 3,585 feet, initial production estimated 105 bbls. per hour through three-quarter inch tubing choke, total depth 3,617 feet. Woodley Petroleum Corp.'s No. 1-B Joe Ladd, top sand 3,621 feet, initial production 105 bbls. per hour through three-quarter inch tubing choke, total depth 3,638 feet.

Smith County

Sinclair Oil & Gas Co.'s No. 1 Patterson, top Pecan Gap 2,705 feet, base Pecan Gap 3,050 feet, top Austin chalk 3,512 feet, base Austin chalk 3,650 feet, sand 3,668-71 feet, initial production 97 bbls. first three hours open through tubing, total depth 3,671 feet. Same company's No. 1 Mrs. R. J. Wright, top Pecan Gap 2,685 feet, base Pecan Gap 3,100 feet, top Austin chalk, 3,524 feet, base Austin chalk 3,648 feet, sand 3,697-3,714 feet, initial production 170 bbls. per hour through tubing, total depth 3,711 feet. Sun Oil Co.'s No. 1 A. V. Rick, top Pecan Gap 2,708 feet, base Pecan Gap, 3,058 feet, top Austin chalk 3,512 feet, base Austin chalk 3,655 feet, sand 3,663-69 feet, initial production 229 bbls. open first two hours through tubing, total depth 3,669 feet. Magnolia Petroleum Co.'s No. 1 Roy Loosier, top Pecan Gap 2,690 feet, base Pecan Gap 3,030 feet, top Austin chalk 3,500 feet, base Austin chalk 3,668 feet, sand 3,668-72 feet, initial production 60 bbls. first 15 minutes through tubing, total 3,672 feet.

Nacogdoches County

Adams and Williams' No. 1 M. I. Stephens, location abandoned.

Van Zandt County

Pure Oil Co.'s No. 8 W. T. Jarman, initial production on eleven-sixteenths inch choke, 100 bbls., total depth 2,952 feet. Same company's No. 3 L. A. Smith, initial production on eleven-sixteenths inch choke 120 bbls., total depth 2,938 feet. Same company's No. 7 Ella York, initial production on eleven-sixteenths inch choke 120 bbls., total depth 2,942 feet.

CHAMPLIN FEDERAL SUIT

Hearing of Champlin Refining Co.'s federal court suit testing the constitutionality of the Oklahoma state proration law will be held June 13, at Tulsa, before John H. Cotteral, Guthrie, Okla., and Ora L. Phillips, Albuquerque, N. M., circuit judges, and Franklin E. Kennamer, Tulsa, judge of the northern Oklahoma district court.

The Champlin company asks the proration law be found unconstitutional; that the state corporation commission, attorney general and Lewis R. Morris, county attorney, be restrained from enforcing the law and that the State be restrained from bringing suit for receiver for Champlin holdings.

GOVERNMENT NOT TO APPEAL BIG MERGER

(Continued from Page 46)

at Milwaukee until it was merged with the Wadhams Oil Corp. when he became president of the latter corporation. When the Wadhams corporation became affiliated with the Vacuum Oil Co., Mr. Maguire was elected chairman of the board.

After the entry of the United States into the World War, Mr. Maguire was appointed a member of the National Petroleum War Service Bureau and director of the Oil Division of the Fuel Administration.

PIPE LINE PROJECT

CHATHAM, Ontario, June 6. — The Ontario Shore Gas Co. of Oshawa, Ontario, is preparing to start work on artificial gas pipe lines from Oshawa to Whitby and Bowmanville, where franchises have been secured. Work has been started on renovation of the artificial gas plant at Oshawa. The company will spend approximately $265,000 this year in extending its facilities.

A.P.I. DIRECTORS AND GUESTS ON TOUR OF EAST TEXAS FIELDS

Top row, left to right: Henry Bacon, H. Humphrey, R. B. Kelly, C. R. Farmer, C. E. Craddock, Victor S. Scales, Fred Haskell, W. C. Platt, T. A. Elkins, Lawrence Smith, W. R. Boyd III.

Second row, left to right: K. Kirkman, E. Andrew, John Crawford, William A. McAfee, Forrest D. Dorn, H. R. Dickerson, H. R. Straight, L. G. E. Bignell, A. W. Ambrose, D. W. Harris, Frank R. Coates, Lauren J. Drake, H. M. Dawes.

Third row, left to right: Ray Parr, R. J. Brennan, Robert R. Penn, D. S. Bushnell, Harry D. Frueauff, Lacey Walker, J. J. Keim, W. M. O'Conner, W. R. Boyd, Jr., Roy B. Jones, Warren A. Sinsheimer, L. V. Nicholas, W. T. Holliday.

Bottom row, left to right: W. M. Averill, C. E. Daugherty, Paul Wagner, H. C. McDuff, B. S. SoRelle, Starley Tevis, J. M. Charlton, T. S. Watson, John G. Pew.

DALLAS, Tex., June 6.—Because of the proximity to the East Texas fields those in charge of the mid-year meeting of the American Petroleum Institute at Dallas decided to organize a field trip for the board of directors and guests to be taken in advance of the regular sessions June 4 and 5.

The contrast between the very orderly and satisfactory manner in which the Van Unit Pool is being operated as compared with the extreme conditions of confusion and disorder that exist in the area to the east of Van was most striking and served to illustrate most forcibly the possibilities of applying unit operations to all pools with its attendant advantages.

Wooden derricks are very noticeable throughout the whole area but a number of steel rigs are now making their appearance and when the larger companies start their operations they will undoubtedly use the more modern type equipment.

While the gas-oil ratio for the field is comparatively low such gas as is produced is usually burned in open flambeaus near the well and it is not difficult to determine the wells that are being produced under restricted rates of flow and those flowing the full capacity of the pipe line taking the oil away from the tanks. The gas flare will vary in size from a small torch burning in an indolent manner to great sheets of flame that reach well above the end of the upright pipe to conduct the gas from separator to atmosphere.

Small pipe lines to loading racks and in one case a 2-inch line from the well to the steam boiler refinery are in operation all over the field. It is reported that there is a total of 46 pipe lines serving this area, of which only eight connect with major pipe line systems.

Along the railroad rights of way there are 38 loading racks with a capacity of 1,644 cars daily.

Internal Combustion Drilling Engines

Detailed Information Relative to Their Application and Operation for Rotary Drilling. Advantages Described

By David L. Trax[1] and R. R. Hawkins[2*]

Gas or gasoline engines are the multicylinder type, rated from 250 to 300 horsepower, with a speed variation from 500 to 900 r.p.m. The drilling engine drives directly from the flywheel through a heavy duty clutch through a flexible coupling to an 18-inch, 18-groove pulley, mounted between two bearings. This drives a two-speed reduction gear by means of a multiple V-belt having a 1-to-1 ratio with the engine. Speed reductions in the gears are 3.5 to 1, and 7 to 1. The gears drive through a jaw clutch between the high and low to the take-off shaft, which in turn drives a heavy duty reversible clutch. From this clutch the jack shaft of the drawworks is driven by means of a standard rotary chain (Figures 1 and 2).

Two other engines of the same type and size drive the mud pumps by means of multiple V-belt drives. In some installations these engines are directly connected to the mud pumps through flexible couplings.

The maximum weight of the largest piece of equipment is 14,000 pounds.

All of the necessary equipment is installed in the regular oil field way, without special construction, equipment or labor. The installation or rigging up time is usually less than with some of the other types of prime movers.

Performance

Information on a well drilled in a hard drilling area may be of interest.

The well was drilled to a total depth of 6,656 feet. Six-inch drill pipe was used to 5,648 feet, and the remainder of the hole was drilled with 4-inch drill pipe. At 5,648 feet a string of 9-inch 40-pound casing was set in 11½ hours, without the necessity of washing in any of the joints.

The total time required for drilling and setting the 9-inch casing was 54 days. The total time from start to finish at 6,656 feet, including coring, allowing cement to set, and all other down time amounted to 106 days.

Operating Cost Data

Data have been assembled covering 12 wells drilled to various depths using gas or gasoline engines as prime movers, and are presented in Table 1.

In the table costs are based on gas at 20 cents per 1,000 cubic feet, and water at 5 cents per barrel.

The costs per gallon of gasoline varies for the different wells as follows:

Well No. 9	$0.15
Well No. 10	0.18
Well No. 11	0.20
Well No. 12	0.12

The average cost of fuel and water per foot of hole drilled using gas is 33 cents, and using gasoline $1.07.

Hoisting Time Study

The accompanying hoisting time study is one of several made by the production committee of the American Society of Mechanical Engineers, Mid-Continent section. It is given here chiefly to show that approximately one-third of the time necessary for a round trip with drill pipe is consumed in actual hoisting operations.

Investment and Depreciation

Investment must be considered on a directly comparable basis to other prime movers. For the gas type of prime mover, where three engines are used and auxiliary equipment included, the investment is approximately 25 per cent greater than for some of the other types of prime movers of equal capacity.

DEFINITE DATA ON PERFORMANCE

Internal combustion engines have been used for rotary drilling for several years, but only casual information has been released relative to their application and operation. The gas type has passed through the experimental stage to an accepted reality; hence it is fitting at this time to present some definite data relative to its performance. The Diesel type is for the most part still in the experimental stage, but information and data available indicate that as a prime mover for rotary drilling it has very favorable possibilities. The internal combustion engine may be used in rotary drilling, mechanically connected to the rotary drilling equipment, or as prime movers to generate electricity for the operation of electric motors mechanically connected to rotary drilling equipment. It is proposed in this paper to discuss only the former.

Prime movers are used in rotary drilling to operate the drawworks and rotary table, and to operate the mud pumps. In most cases, where internal combustion engines are used, one is used to furnish power to the drawworks and rotary table, while one or more are used to supply power to the mud pumps.

TABLE 1
Gas (Residue and Natural)

Well No.	State and county—	Depth (feet)	Drilling time (days)	Volume of fuel (1,000 cu. ft.)	Water per day (bbls.)	Fuel and water cost (per foot drilled)
1	Oklahoma, Lincoln	3,104	29	5,121	150	$0.40
2	Kansas, McPherson	3,381	22	4,395	150	0.31
3	Kansas, Harvey	3,433	19	4,462	150	0.30
4	Oklahoma, Lincoln	3,940	37	2,565	150	0.20
5	Oklahoma, Seminole	3,361	26	3,124	200	0.16
6	Kansas, Sumner	4,235	40	4,872	175	0.31
7	Oklahoma, Noble	4,877	63	9,754	200	0.53
8	Oklahoma, McClain	6,656	93	8,985	200	0.41
	Gasoline					
9	Kansas, Ellis	3,460	28.5	15,224	200	0.74
10	Kansas, Reno	3,906	41.0	27,125	165	1.34
11	Oklahoma, Grant	5,084	49.0	39,655	200	1.66
12	Oklahoma, Noble	4,343	56.0	16,648	160	0.56

TABLE 2—SUMMARY OF HOISTING TIME STUDY IN MAKING ROUND TRIP AT 3,378 FEET WITH GAS ENGINE DRIVEN EQUIPMENT

Operation—	Time—Minutes	Time—Seconds	Per cent of total time
Laying down single joint	4	40	3.900
Actual hoisting operation	36	56	30.800
Setting slips and breaking out joint	9	36	8.000
Picking up fourbles and racking	2	28	2.060
Lowering elevator (light)	9	25	7.000
Laying down drill bit assembly, changing bit and returning assembly to hole	9	57	8.300
Total time coming out—1 hour, 13 minutes, 2 seconds.			
Greasing crownblock	..	27	0.037
Picking up fourbles and making up joints	10	7	8.450
Lowering pipe, unlatching elevator	15	..	12.500
Hoisting elevator (light)	11	23	9.500
Putting in single grief stem and lowering to bottom	10	..	8.350
Total time going in—46 minutes, 57 seconds.			
Total time used in making trip—1 hour, 59 minutes, 59 seconds.			

It is difficult at this time to arrive at any definite conclusion as to the life of this equipment in order to establish a depreciation rate. However, if the depreciation rate be predicated at five years, it is probable that this would be determined more by obsolescence than by actual wear of the equipment.

Diesel or Oil Engines

As mentioned in the abstract, the Diesel type of prime mover for rotary drilling is still in the experimental stage, so that data are available on only a few wells which have been drilled.

Two full Diesel type, multicylinder engines, from 150 to 275 horsepower, with solid injection and variation in speed from 300 to 800 r.p.m., are used in combination to supply power to drawworks and mud pumps. The engines drive from flywheels through heavy duty clutches and flexible couplings to a gear box, thence to a jack shaft with heavy duty reverse clutch. The drawworks, jack shaft and pumps are then driven from this jack shaft by means of the standard rotary chains (Figures 3 and 4).

The full Diesel type engine, having no ignition system, and with a common governor control, may be readily synchronized and used in combination when necessary. A closed water circulating system, either radiators or coils, is used for cooling. The equipment is also easily installed without any special construction, equipment or labor, and the time required is usually less than with some of the other types of prime movers.

Performance

One well recently completed to a total depth of 3,860 feet in wildcat territory required a total of 63 days including shutdown time for repairs.

The fuel used was crude oil, with the following analysis:

Gravity, °A.P.I.	38.3
Sulphur	0.264
Carbon residue (Conradson)	1.970
Moisture	Trace
Sediment	0.040
Acidity in grams of potassium hydroxide per gram of oil	0.028
Ash	1.580

The average amount of fuel used per hour by the drilling engine, when drilling, was 7.5 gallons; when hoisting, 9 gallons, and the pump engine used 12 gallons.

A total of 15,000 bbls. of water was used, but half of this amount was used when circulation was lost on three different occasions.

The cost of fuel per foot of hole drilled was $0.233, the cost of water per foot of hole drilled was $0.125, or a total fuel and water cost per foot of hole drilled of $0.358.

A summary of the operating time on this well is as follows:

Rigging up time	9 days
Making, casing and cementing pipe	4 days
Actual drilling and casing time	31 days
Shutdown time	19 days
Total time	63 days

From another well now drilling at ap-

(Continued on Page 86)

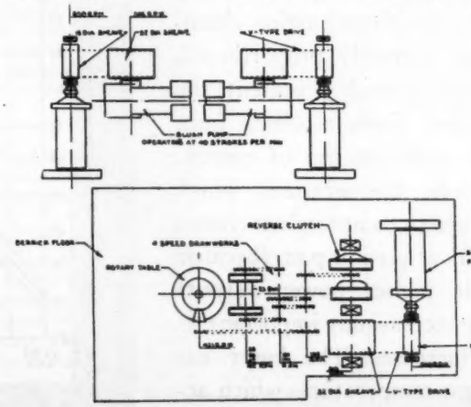


Figure 1—Gas or gasoline engine layout for rotary drilling, driving direct from prime mover to jack shaft with multiple V-belt. (Mud pumps belted to engines.)

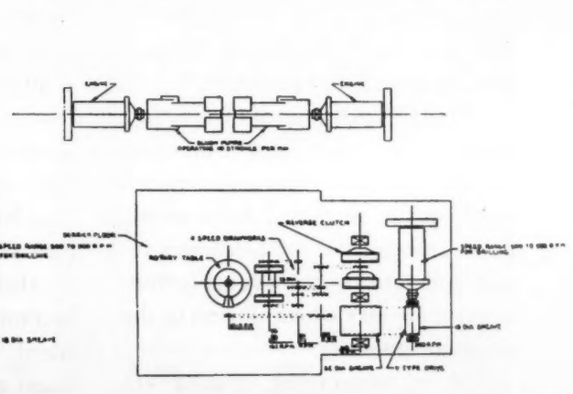


Figure 2—Gas or gasoline engine layout for rotary drilling, driving direct from prime mover to jack shaft with multiple V-belt. (Mud pumps directly connected to engines.)

*Before division of production, American Petroleum Institute, Dallas, Tex., June 4, 1931.

[1]Gypsy Oil Co., Tulsa, Okla.

[2]The Texas Company, Tulsa, Okla.

3 GRAPHS *Showing How Increased Compression*

. . . INCREASES POWER

. . . LOWERS HEAT TO COOLING WATER

. . . AND LOWERS EXHAUST TEMPERATURES

BECAUSE pressure raises the temperature inside cylinders before ignition, it is a commonly accepted idea that high compression engines present a heat problem.

Such is not the case. The waste heat of a high compression engine is less than that of a similar engine of lower compression ratio.

Obviously this is so, since when an equal amount of fuel is burned in each type, the higher compression motor converts a greater percentage of the fuel energy to power, leaving less heat to be dissipated through cooling systems and exhaust.*

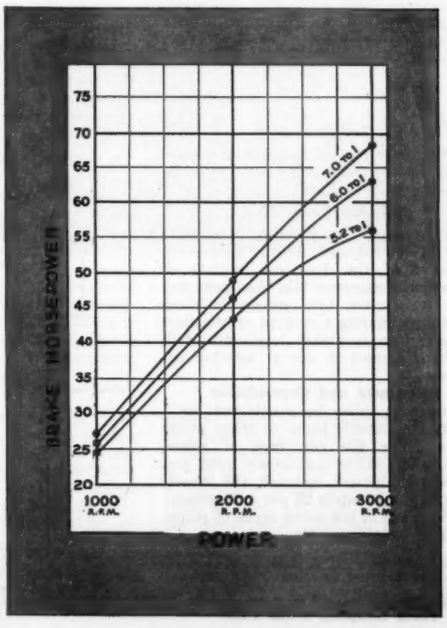
These conclusions of theory are borne out by experimental practice. During several years the experiments made in Ethyl Engineering Laboratories have indicated this result, and data are now available from a series of tests which illustrate the point conclusively.

The accompanying graphs are made from tests of a typical eight cylinder engine.

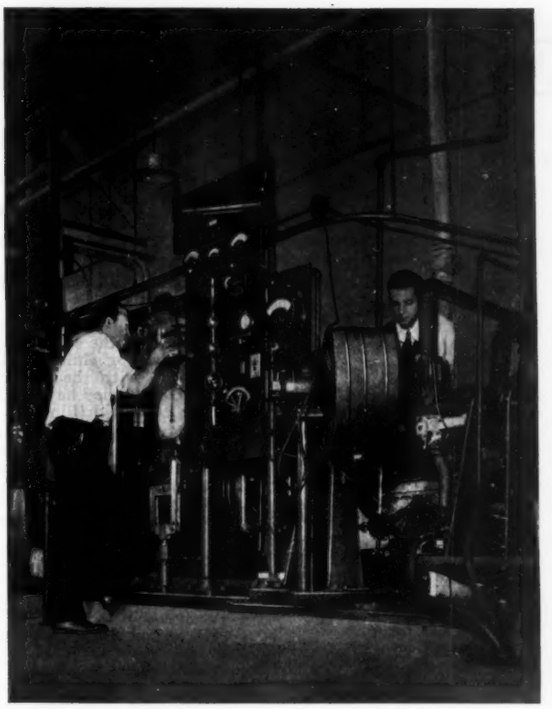
In Figure 1 the power of the engine is plotted with the use of three different heads to give compression ratios of 5.2 to 1, 6.0 to 1, and 7.0 to 1 (having compression pressures of 104 pounds, 130 pounds, 171 pounds, respectively). The differences in the percentage of power increases at different speeds are due largely to the use of planed heads to secure higher compression and do not exist if combustion chambers are correctly proportioned.

Figures 2 and 3 present the lower heat losses resulting from a more efficient use of energy. The cooler temperatures which the higher compression ratios maintain at given r.p.m. (because of their higher power output) become increasingly important as speed increases. The lower exhaust gas temperatures which accompany high compression ratios are of importance both because of the lower temperatures imposed on the exhaust valves and because of the smaller amount of heat transmitted from the exhaust pipe to the driving compartment during hot weather.

Body-designing engineers will also find the curves in Figure 3 par-



*This assumes the use of fuel of sufficient anti-knock value to prevent detonation in each engine.



In this heat balance experiment, the temperature of exhaust gases is measured by a thermocouple pyrometer. The amount of heat absorbed by cooling water is measured by sensitive thermometers which indicate the temperature of the water upon entering and leaving the cooling jacket, and by scales which weigh the amount of water passing through. The torque is measured by an electric dynamometer. The speed is measured by an electrically operated revolution counter and a stop watch.

ticularly attractive. Higher compression pressures hold a promise for them of radiators of smaller area even with motors of increased power. This will be of even greater importance in aviation, where air resistance of the frontal area has a marked effect on performance.

A large number of high compression cars are now on the road. These cars operate without detonation on the Ethyl Gasoline commercially available on every highway in the country, and their performance is far superior to that of cars having the usual average compression.

A manufacturer who desires the increased efficiency of high compression motors but distrusts the available supply of a fuel which will operate without detonation is running from a shadow. There are now over 250,000 pumps in the country that bear the Ethyl emblem. Approximately five million motorists already use Ethyl Gasoline regularly, and the number is growing rapidly.

With the public demanding more power, faster acceleration and favoring low sales prices, the compression pressures of 1932 models seem certain to be higher. And if the present success of cars developing superior performance is an indication, those manufacturers who take best advantage of the compression pressures permissible with Ethyl Gasoline will be rewarded by increased sales. Ethyl Gasoline Corporation, Chrysler Building, New York City.

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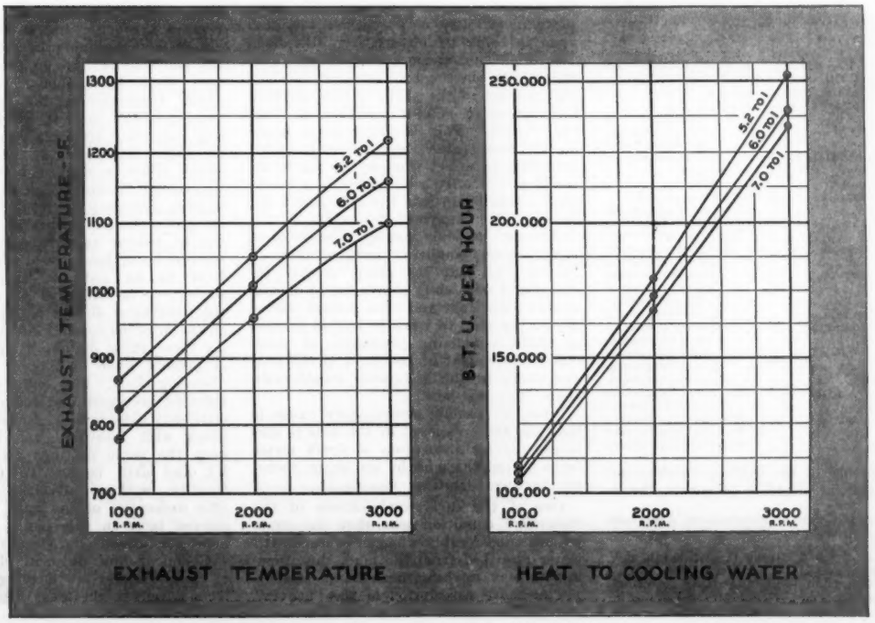
ETHYL GASOLINE

The active ingredient used in Ethyl fluid is lead

FIGURE 1 shows the relative brake horsepower of the engine (at three ratios of compression) for speeds between 1000 and 3000 r.p.m. Figure 2 shows the temperatures of exhaust gases in degrees Fahrenheit taken by a thermocouple in the exhaust pipe. Figure 3 shows the amount of heat absorbed by cooling water in British Thermal Units per hour.

The Ethyl emblem on any pump stands for tested gasoline of Ethyl quality. Constant inspection of gasoline taken from Ethyl pumps throughout the country guards this standard. Ethyl Gasoline is always colored red.

THE DRIVER OF ANY CAR ANYWHERE IS NEVER FAR FROM ETHYL GASOLINE



Drilling Fluid Problems on Gulf Coast

Treatment of Difficulties From Heaving Shales, Viscous Muds, High Gas Pressures, Fine Sand, Salt and Chemicals

By W. T. Doherty[1], Stanley Gill[2] and C. P. Parsons[3]*

The relation of drilling fluids to increased operating costs is illustrated by the excessively viscous natural mud produced in a great many deep wells in the Gulf Coast area. Briefly, such a mud slows up the drilling considerably. It causes excessive building up of the wall of the hole, causing tight holes. It loads up with cuttings and sand. It is low in fluidity. This combination of tight hole and sluggish nature of the mud causes exceptionally high circulating pump pressures, which in combination with the high sand content of the mud causes expensive wear and tear on the circulating equipment. Such a mud also easily becomes gas-cut, which encourages expensive blowouts.

From a study of the general characteristics of the Gulf Coast formations it is apparent that a mud highly laden with sand may be expected down to the Pliocene, a high concentration of calcium compounds in the Pliocene and Miocene, and considerable colloidal material in the Oligocene and upper Eocene.

Aside from the general characteristics outlined, most of the drilling in the Gulf Coast is in salt dome areas where the formations are highly inclined. Cores have shown extreme cases where the cleavages are vertical. This steep inclination and the easily parted slaty cleavages of some shales present considerable drilling difficulty.

Also it is necessary in some cases to drill through large bodies of solid salt.

An attempt will be made in this paper to describe each of the problems and some present methods of treatment in the field.

Heaving Shale

The term "heaving shale," which is applied to a type of formation which gives rise to extremely serious difficulties in the Gulf Coast drilling operations, describes an effect rather than a material. In common usage the name "heaving shale" is applied to any shale formation which "heaves." The term is a really a misnomer, as it indicates that the shale heaves only of its own accord. These heaving formations are encountered in practically all of the Gulf Coast fields, and have offered an almost impassable barrier to deep production in many areas. Table 1 lists some of the various fields in which "heaving shale" was very troublesome.

TABLE 1—FIELD FORMATIONS IN WHICH CONSIDERABLE "HEAVING SHALE" HAS BEEN ENCOUNTERED

Name of field—	Geologic series in which "heaving shale" was encountered
Citrus Grove	Miocene
Bryan Mound	Miocene
High Island	Miocene and Lower Oligocene
Jennings	Lower Oligocene
Hackberry	Lower Oligocene
Needville	Lower Oligocene
Mykawa	Lower Oligocene
Goose Creek	Lower Oligocene
Clodine	Lower Oligocene
Boling	Lower Oligocene
West Columbia	Lower Oligocene
Damon Mound	Lower Oligocene
Moss Bluff	Lower Oligocene
Markham	Lower Oligocene
Vinton	Lower Oligocene
Big Creek	Lower Oligocene
Fannett	Lower Oligocene and Eocene
Hull	Eocene (Claiborne)
Humble	Eocene (Claiborne)
Nursery	Eocene (Claiborne)

The nature of the drilling troubles accompanying attempts to penetrate "heaving shale" can be readily understood from a description of the "heaves."

"Heaves" of loose, coarse particles of shale, filling up the hole 100 feet, are of common occurrence; while in a number of cases the shale has filled up the hole 500 feet. Very often these "heaves" are first noticed after the drill stem has been pulled and run into the hole, the drill stem finding several hundred feet of shale in the hole, which is very difficult to clean out. On the other hand, "heaves" have occurred and caught the drill stem while drilling. Other "heaves" have been reported so violent that they lifted the drill stem.

It is felt that most of these "heaves" are primarily caused by the shale being actually pulled into the hole by a combination of three factors: First, the balling-up of cuttings on the bit or drill collar; second, upward movement of the drill stem; and, third, the steeply inclined, easily-parted shale responds very readily to movement.

Balling Up

The nature of these shales is such that they form a thick, sticky mass in combination with fresh water in the mud. This sticky mass accumulates or "balls-up" on the bit. When the bit balls-up and circulating pressure becomes extremely high, the driller will usually attempt to clean the bit by spudding. This results in a swabbing action in the hole, which will start a sluffing movement of the steeply inclined, easily-parted shale. This same swabbing action, only more pronounced, also occurs when the drill stem is being withdrawn from the hole. The thick mud and coarse shale particles accumulate on the bit, acting as a swab and pulling in the shale. When the drill stem is again run in the hole, it finds the "heave." This explanation is based on the assumption that "heaving shale" describes an effect whereby the shale actually is not only a cave, but is a movement of shale up into the hole above the level of the "heaving" formation.

Another possible cause, mostly as a bad caving condition rather than a "heave," is that the shale, steeply inclined and with slaty cleavages, by means of its own weight and loose nature, either allows the mud to work in behind a mass of shale, equalizing pressures, or overcomes the weight of the fluid in the hole and slides or shifts, forcing considerable shale into the hole.

Another possible contributory cause is that the shale exposed in the hole is disintegrated by absorption of fresh water from behind the mud by the shale, thereby starting a sluffing movement.

One of the early explanations of the "heaving" condition was that the shale swelled considerably when in contact with water absorbed from the mud, thus forcing its way up into the hole.

The above description of the "heaves" and outline of causes show clearly that prevention and remedy lie considerably in the mechanics and operation of drilling equipment, but of equal importance is the control of the drilling fluid. One without the other would be ineffective.

Methods of Prevention

The methods of prevention and remedy that have been used in the field in connection with the drilling of "heaving shale" are as follows:

A. To prevent shale from balling-up on bit: In a great many cases fast rotating and slow penetration have been effective, in combination with large capacity pumps and increased velocity of the circulating fluid, to clear the hole of the shale particles as soon as possible. It has also been found desirable to reduce the viscosity of the mud, as the natural mud usually present when drilling "heaving shale" is very high in viscosity. These muds are so highly viscous that excessive circulating pressures are necessary to circulate them, even without the added burden of carrying heavy, coarse shale particles out of the hole. These shale particles have a specific gravity of 2.3 to 2.5, which is considerably heavier than the mud. To drill larger holes in deep wells, for the purpose of providing sufficient room around the drill stem to permit free flow of mud fluid and shale cuttings, has been found effective. Chemical treatment of the mud, though in its infancy, has offered a preventive that has already been used for the purpose of preventing the disintegration of the shale and to counteract the sticky mud making properties that cause the shale to ball-up on the bit. Laboratory tests have shown that "heaving shale" fragments do not disintegrate or form a sticky mud in strong caustic or salt solution. Attempts have been made to apply this to actual drilling of the shale. When a mud is being so treated to prevent disintegration of the shale, it is also necessary to treat it to stabilize its own colloidal property. However, the use of sodium tannate solutions, as described later, has proved effective in the field as an aid to drilling "heaving shale." to be effective as a preventive, this treatment should be started as soon as the Miocene formations are penetrated. As these thick drilling fluids are usually present when drilling or cleaning out "heaving shale," they cause excessive circulating pressures and reduce circulating efficiency considerably. Increased fluidity, along with increased velocity, helps to keep the shale cuttings away from the bit and drill collar. To increase this fluidity, without affecting other desirable properties of the mud, will be considered later in this paper under treatment for excessively viscous muds.

Chemical and physical characteristics of three samples of "heaving shale," two from a well in the Moss Bluff Field and one from a well in the Goose Creek Field, are as follows:

	(1)	(2)	(3)
Loss on ignition	13.52	12.00	13.95
Silica	62.28	62.44	59.46
Oxides of iron and aluminum	19.72	20.79	22.51
Calcium oxide	2.65	3.71	2.22
Unaccounted for	1.83	1.06	1.86
Total	100.00	100.00	100.00

(1) Sample 1. Core from Moss Bluff Field, 6,539-44 feet (per cent by weight).
(2) Sample 2. Cuttings from Moss Bluff Field, 6,400 feet (per cent by weight).
(3) Sample 3. Core from Goose Creek Field, 6,498-6,502 feet (per cent by weight).

A microscopic examination shows these samples to consist of clay, small shells, and bits of lignite. Specific gravity of these samples was 2.3. Physical tests of the samples show that they are not of the bentonitic type that swells considerably into a honeycombed, gel-like mass when in contact with water. On contact with fresh water, the samples disintegrated by breaking up into very small fragments without any honeycombing or attached effect between one particle and another. However, these particles had sticky qualities when the least mechanical pressure was applied to them. When undergoing the mechanical smearing action of the sides of the drilling bit, these shales will form very sticky muds. They did not break down, however, in a caustic or salt solution, as already described.

Reducing Viscosity

B. To prevent thick mud and coarse shale from accumulating on the bit or drill collar when withdrawing drill stem: Besides the treatment for overcoming the balling-up of the mud on the bit, which also applies here, it has been found effective to reduce the viscosity of the mud to prevent excessive building up of the wall of the hole. It has been found effective to increase the velocity of circulation by using larger capacity pumps to clear the hole of shale particles as soon as possible. It has been found effective to pump all of the shale particles out of the hole before withdrawing the drill stem. The problem has been helped considerably by the use of vibrating screens for immediately removing the shale particles out of the mud after they reach the surface. Wide and long circulating ditches, equipped with flow dams or riffles, have been effective in a great many cases in combination with reduced viscosity. Settling of cuttings has been accelerated by heating the mud slightly. Another effective means to prevent the swabbing action of withdrawing the drill stem has been to swivel the drill stem out of the hole with a "wash" swivel on top of the drill stem.

C. To prevent the shale from absorbing water from mud: There has been considerable work done along this line. In the past, however, the very thick muds that have been used usually contained little free water, but the thick muds present other disadvantages. It has been found that the water in thinner muds can be treated chemically, as already described, to reduce the affinity of the water in the mud for the shale. In some cases it has been found effective to treat the mud with powdered, colloidal admixes that are much more efficient than the natural mud in holding the water in the mud.

Other Preventive Measures

D. Other preventive measures while penetrating the shale: Efforts have been made to drill through the "heaving" shale beds in one continuous run. There are many mechanical dilliculties in doing this, but considerable extra hole has been made in such attempts. The equipment and practices that have possibilities along

(Continued on Page 86)

PREMATURE ABANDONMENT OF EXPENSIVE TESTS

The logs of innumerable deep tests in the Gulf Coast are concluded by the statement "abandoned—heaving shale." Not only have the drilling fluid problems of the Gulf Coast been intimately connected with the premature abandonment of many expensive deep tests, but they have added materially to the day-in and day-out footage cost of drilling.

Among the most troublesome of these problems are those in connection with drilling of "heaving shale," formation of excessively viscous natural muds, high gas pressures encountered, fine sand that accumulates in the mud, drilling of solid salt formations, and with the chemical contamination of the mud by salt water and by calcium compounds picked up in the formations.

*Before Division of Production, American Petroleum Institute, Dallas, Tex., June 4, 1931.
[1]Humble Oil & Refining Co., Houston, Tex.
[2]Gulf Production Co., Houston, Tex.
[3]Halliburton Oil Well Cementing Co., Duncan, Okla.

Offers Sliding Scale Plan for Proration

California Assistant Umpire Suggests Method Embodying Best Features of Systems That Have Been Used in Various Areas

By Robert E. Allen
Assistant Umpire, State of California*

SUMMARY OF SUGGESTED PLAN

A method embodying the best features of proration methods now in use has been devised to serve as a general plan of proration equally applicable to town-lot and large acreage fields. The proposed plan recognizes potential production and the relative worth of a property as the fundamental facts of proration, but gives variable consideration to each depending on the degree of development of the property as compared with the development of the field.

The production quota of the field is divided: a percentage of the field equal to the percentage of field development is prorated on the basis of potential production and the balance is prorated on the basis of relative worth which is acreage adjusted for variable productivity. The marginal well is considered and a method offered for its consideration.

The sliding scale plan of proration encourages orderly development, penalizes excessive drilling, gives due consideration to undrilled acreage, partially recognizes investment, protects marginal wells and establishes equitable production relationships.

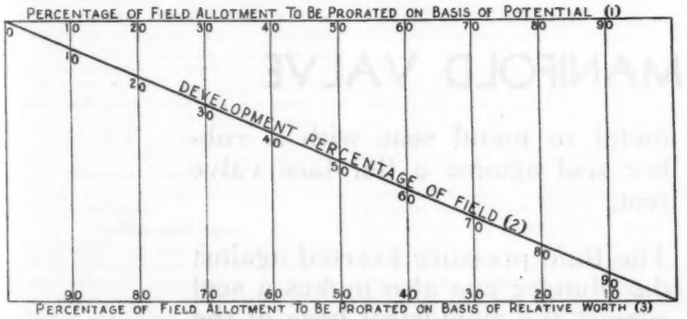
Proration has now been with us long enough to have demonstrated some of its fundamental principles and to have eliminated many of the nonessential ideas with which it was first encumbered.

The groping efforts that characterized proration at its inception has given way to more certain directness of aim and somewhat surer progress, but there is still much progress to be made in making proration entirely equitable and satisfactory in its application.

The fundamentals of proration are simple. The only data available on which to base proration are potential production, acreage and extent of development. These factors may be used in their simplest form or may be so combined as to form other and perhaps better factors.

We know that in allocating the field quota among the various properties we should be guided in some way by these factors and we know also that no single property should receive an allotment greater than its potential production nor large enough to permit unfair concentration of production from groups of offset wells. We are also aware that it is contrary to the present principles of proration to require a well or property to curtail to the point of suspension.

This is about all we have to start with in our study of proration. The wide range of possibilities offered by these few factors is probably sufficient for any present consideration of the problem. It is the aim of this paper to present a brief analysis of the problem and to offer a method of solution that is intended to be more practicable and more equitable in its application to difficult or unusual fields than procedure previously used.


PERCENTAGE OF FIELD ALLOTMENT TO BE PRORATED ON BASIS OF POTENTIAL (1)
0 10 20 30 40 50 60 70 80 90
DEVELOPMENT PERCENTAGE OF FIELD (2)
PERCENTAGE OF FIELD ALLOTMENT TO BE PRORATED ON BASIS OF RELATIVE WORTH (3)

A method of proportioning the field allotment for proration purposes. The percentage of field development is the percentage of the field allotment to be prorated on potential basis; balance is prorated on acreage or relative worth.

(1) Total potential of unit should be used.

(2) Percentage development = Number of completed wells / Number of proved locations.

(3) Relative worth of unit = Average well potential. Proved locations or proved acreage may be used instead of relative worth.

Plate 1—The principle of sliding scale proration. The percentage of the field allotment to be prorated on a potential basis is always equal to the percentage development of the field. The balance of the field allotment is prorated on basis of acreage or relative worth of the properties.

Essential Requirements

To be successful and lasting, any method of prorating production within a field should:

1. Maintain the production of the field at either a specified quota or at a certain percentage of its potential.
2. Discourage and penalize all unnecessary drilling and the resulting increase in potential.
3. Recognize and reward such drilling as may be really necessary.
4. Protect all deserving marginal wells from forced suspension.
5. Establish equitable production relationships between the various producing units of the field.

The maintenance of field production at a specified amount is of course the first and most important function of proration within the field. The field quota may be either a fixed amount as dictated by the outlet or by some authorized body, or it may be some definite percentage of the actual or estimated potential of the field. The tendency is toward the establishment of arbitrary quotas for different fields regardless of their potential production, and this practice will doubtless become more pronounced as its advantages are better realized. However, the source of a field quota is of little importance as compared to the distribution of that quota within the field.

"Menace Value"

It is now well recognized that the potential production of a field has what might be called a "menace value" and it is this menace value which leads to market unsettlement and consumer indifference. In effect, potential production has practically the same influence on the oil market that excessive futures have on the grain market. Impending conditions very frequently exert a greater influence than actual present conditions. It is interesting to speculate on the extent of decline in potential which would result in an oil shortage panic of the same degree as the one occasioned by present overproduction.

The discouragement of all unnecessary drilling is therefore one of the important functions of field curtailment. Drilling may be considered as being unnecessary where it may result in either an increased ultimate recovery or an increased rate of recovery from property in question as compared with adjacent properties. It is not too much to say that field proration should promote and encourage orderly development and uniform recovery and should severely discourage excessive drilling and irregular production practices. Furthermore, such discouragement should be made at least partially retroactive where needed.

As a corollary to the discouragement of unnecessary drilling there should be some provision for the recognition and reward of drilling that must really be done to protect a property from drainage or to enable the recovery of a proportionate amount of oil. Then there is the drilling which, while legally required, is economically unjustifiable and which should be recognized as necessary drilling, but as unnecessary production.

In effect, the application of a rule in regard to drilling would be to establish for each property a fair rate of production which will eventually result in proportionate and equitable recoveries from each property. If one operator has already developed a potential which would result in an unfair rate of recovery his curtailment as based on potential should be such that the rate of recovery is reduced to normal. If another operator has lagged behind in his drilling program he should be assured of receiving an adequate allotment for each unnecessary well completed, and in the meantime he should receive as large a portion of his ultimate maximum allotment as he may produce without producing his offset wells at a higher percentage of their potential than that prevailing on adjacent properties.

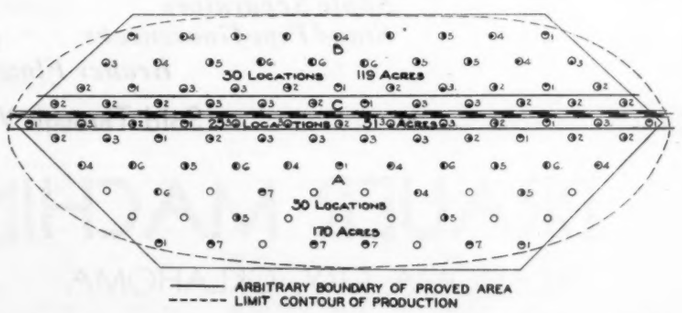
At its inception curtailment was based entirely on potential production or ability to produce. As proration has progressed there has been a steady tendency toward the consideration of modifying factors, not the least of which is the ability of an operator to curtail. The marginal well is being given more and more consideration by curtailment committees everywhere, and it is probable that very definite concessions will soon be made to the entire class.

Marginal Wells

The marginal well was originally an edge well of small production but the term has grown to include all wells or properties that for some good reason cannot take the full percentage of curtailment assigned the field and remain in operation. The good reasons may include small production, water trouble, production difficulties, financial condition of the operator, legal agreements, etc. All of these have been presented and accepted as justification for the establishment of minimum allotments for such wells below which amounts they need not be curtailed. The derivation of these minimum allotments is an interesting study in itself and will be further considered.

Proration is bringing about a gradual change in the opinion of operators on the subject of recoverable reserves. Many an operator formerly considered that he was entitled to all the oil he could produce regardless of the possible rights of his neighbors, and in this belief he spent money that not only resulted in excessive drilling but which might very frequently have been left in any bank to better advantage. This idea is giving way to the principle that rate of return on investment is often more important than total return when the attached risk is considered.

While an operator does not wish to suffer a loss of oil to his neighbor it is evident that it is cheaper to prevent such a loss by restrictions of some kind on the neighbor rather than by protective drilling. Encouraged by courts and by some splendid examples of unit operation, operators are coming to the conclusion that an oil pool is the joint property of all producers, each of which has only a proportionate interest therein and the right to produce that interest only at a rate commensurate with that of other producers. More and more frequently are

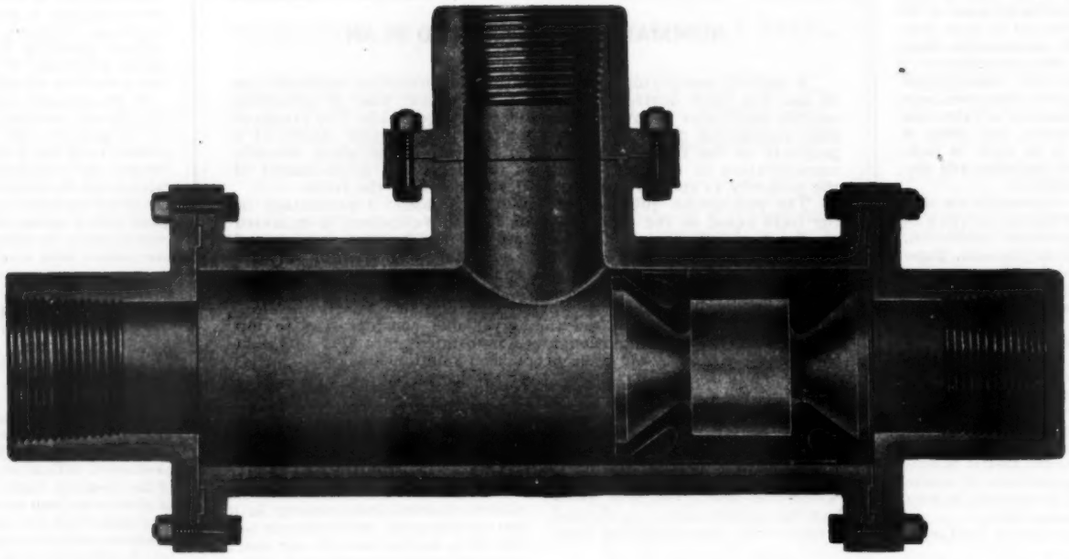


Development map of an extreme oil field illustrating difficult proration conditions. Well numbers refer to number of period in which their potential became effective or eligible for allotment of production.

Plate 2—A hypothetical oil field illustrating the range of difficulties frequently encountered in the proration of irregularly owned and unevenly developed fields. Property C, which is a railroad right of way, is representative of the close well spacing and rapid development so often found in town lot areas. Property A represents a large lease undergoing orderly and unhurried development. Property C is an approximate mean between A and C and represents a fair average for the field.

*Before Production Division, American Petroleum Institute, Dallas, Tex.

BRAUER SUPERIOR VALVES



BRAUER IMPROVED MANIFOLD VALVE

The improved features of this valve are the new double cup plunger and flat face valve seats. This eliminates the trouble with the plunger sticking and also does away with the necessity of any additional packing means.

The plunger is of molded rubber around a steel core, this permits a metal to metal seat with a rubber seal against a flat face valve seat.

The fluid pressure exerted against the plunger cup also makes a seal against the cylindrical bore of the valve and prevents sand working around the plunger causing it to stick.

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proration programs being required to correct and prevent inequities of production and to establish the proper production relationships between various producing units.

Basic Facts

An investigation of the possible facts upon which to base proration shows that only three are at all practicable. These are:

1. Size of property (acreage or reserves).
2. Degree of productivity (potential).
3. Capital investment (development).

Each of these has its proponents and its arguments in favor of its use as the basis of proration. These arguments are too well known to mention here but it may be noted that each base has its objections as well as its advantages.

In analyzing the possible application of each of these bases it was considered advisable to determine how each would apply to fields of opposite extremes of character. At one extreme is the newly discovered field in which development is just starting. There is no longer much argument against developing such a field under unit operation if at all possible. Under unit operation, returns to individual members are generally prorated according to acreage, either proved or initial, although occasionally adjustments have been made to reflect the varying reserves of widely different parts of the field as determined by drilling. It may be said then that for the new field proration should be based either on proved acreage or on recoverable reserves.

At the opposite extreme is the old, completely developed field where drilling has long since ceased and where principal difference between properties is their rate of production, which can be determined within very close limits. Obviously enough, the only thing to consider in prorating such a field, if it must be prorated, is the potential production of the various properties. There is no need to consider acreage because the proper value of each acre is already apparent and there is likewise no need to consider investment because the expenditure for drilling has already been amortized if it ever will be. For settled, completely developed fields then, the use of potential production as the basis of proration is indicated.

Capital Investment

It is apparent that if capital investment is to be considered at all it will be in the case of some partly developed fields where notable irregularities of development are present. It has been urged that some consideration must be given to the fact that it costs as much to drill a poor well as a good one, and also to the fact that actual cash outlay is much more important to most of us than are the resources which may be recovered by such expenditure. It is probable that investment may be satisfactorily considered indirectly, if at all.

For practical purposes then it may be concluded that between the extremes mentioned lie all oil fields. Proration should be based on acreage or reserves at one extreme and on potential production at the other extreme. It seems logical, therefore, to suggest that fields intermediate between these extremes be prorated upon some combined basis involving both acreage and potential. This, of course, has already been done in the case of some prominent fields by dividing the total field allotment into two equal or unequal portions, one of which is distributed to properties on the basis of their potential production and the other on the basis of proved acreage.

The division of the field quota has usually been arbitrary or by compromise. It is here suggested that the percentage of development of the field be considered as the determining factor in the establishment of the portion of the quota to be prorated on the basis of potential production. If an old field which is 100 per cent developed is prorated entirely on the basis of potential production it seems reasonable to say that a field only 40 per cent developed should have 40 per cent of its total allotment prorated on the basis of potential, and the remaining 60 per cent on the basis of acreage.

In making a study of the application of the suggested method of dividing the field allotment it was found that there were numerous other cases where some improvements or refinements in the method of field proration were necessary in the interests of equity and fairness. The more important of these special problems will be considered separately.

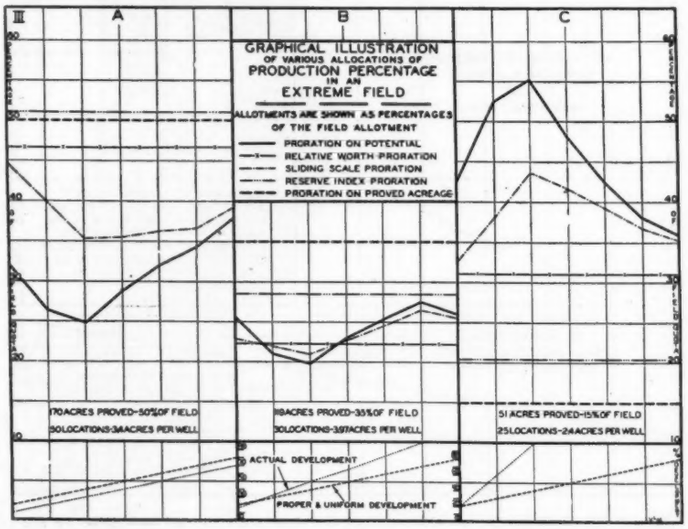

Plate 3—The percentage allotments of the three properties for seven successive periods, and as determined by five different methods of proration are here shown graphically. The various degrees of property development at different periods are also shown, together with an ideal uniform development curve for each property. It will be observed that three of the proration methods used may result in practically constant allotments to each property regardless of its potential or degree of development. Proration on the basis of potential results in allotments that give no consideration to undrilled acreage or reserves. The sliding scale percentage allotments have the effect of penalizing development which is greater or less than the average for the field, and of rewarding uniform development.

Potential Production

Potential production has been variously defined and interpreted but the most commonly accepted definition says that: "Potential production is the amount of oil the well is capable of normally producing at and during the specified time." It will be observed that the word "normally" is subject to very wide interpretation, and alternatives such as "most efficiently" or "through a 1-inch bean," etc., have been offered and are in occasional but not general use. Then there is the time element, for while potential is usually expressed as barrels daily, such an amount may be and frequently is predicated on such very different figures as barrels per month and barrels per hour. Also there is the fact that two different operators can obtain considerably different production from the same well.

Everything considered, "potential production" should be retained as a term designating the relative productivity of a well or property. However, there is room for much improvement or standardization in the definition of the term. Various substitutes for "potential production" have been proposed, such as "pressure drop," "differential pressure," etc. These are acceptable in many cases but are not universally applicable. At present the most satisfactory measure of potential production is the amount of oil produced under prescribed conditions during the longest test possible.

Total vs. Average Potential

The chief objection to using the total potential of a property as the basis of its allotment is that drilling is thereby encouraged and the evil effects of an increasing potential are sought for rather than avoided. The best solution of this problem has been through the use of an average well potential rather than the total potential. The average well potential is the total potential of a producing unit divided by the number of wells thereon. It is evident that additional drilling on a unit already partly developed would be just as likely to decrease as to increase the allotment of the unit depending upon whether the new well was larger or smaller than the average of the others. Of course, additional drilling might be absolutely necessary to protect the property or to adequately drain it but such drilling would merely result in producing the same amount of oil from more wells.

Unfortunately, the use of the average well potential as the basis of proration also has its flaws, chief of which is the requirement that all producing units be of the same area and under the same general method of development if the principle in its simplest form is to be used.

In a field having properties of irregular shape and size the application of the average well potential as a basis of proration must be preceded by the division of the field into producing units of equal area or by the computation of an adjusted average well potential for each property. If the field is divided into equal producing units it is desirable that the area of each unit should not exceed 40 acres.

A factor representing the adjusted average well potential of a property is found by multiplying the actual average well potential by the proved acreage of the producing unit. The factor thus determined is meant to be used as a substitute for total potential but peculiarly

TABLE 1—PRORATION SCHEDULE COMPARING DIFFERENT METHODS OF ALLOCATION IN AN EXTREME FIELD AT DIFFERENT STAGES OF DEVELOPMENT

	Per cent developed	Proved acreage allotment B/D	Proved acreage allotment % Field	Relative worth allotment B/D	Relative worth allotment % Field	Sliding scale allotment B/D	Sliding scale allotment % Field	Reserve index allotment B/D	Reserve index allotment % Field	Prorated potential allotment B/D	Prorated potential allotment % Field	Actual potential
FIRST PERIOD												
A	10.00	10,000	50.00	9,320	46.60	8,905	44.53	10,210	51.05	6,380	31.92	7,500
B	16.67	7,000	35.00	4,470	22.35	4,560	22.80	5,710	28.55	5,110	25.53	6,000
C	20.00	3,000	15.00	6,210	31.05	6,535	32.67	4,080	20.40	8,510	42.55	10,000
Total	14.28	20,000	100.00	20,000	100.00	20,000	100.00	20,000	100.00	20,000	100.00	23,500
SECOND PERIOD												
A	20.00	10,000	50.00	9,320	46.60	7,970	39.85	10,210	51.05	5,260	26.32	13,500
B	33.33	7,000	35.00	4,470	22.35	4,380	21.90	5,710	28.55	4,210	21.05	10,800
C	60.00	3,000	15.00	6,210	31.05	7,650	38.25	4,080	20.40	10,530	52.63	27,000
Total	33.33	20,000	100.00	20,000	100.00	20,000	100.00	20,000	100.00	20,000	100.00	51,300
THIRD PERIOD												
A	30.00	10,000	50.00	9,320	46.60	7,050	35.25	10,210	51.05	4,970	24.87	18,225
B	50.00	7,000	35.00	4,470	22.35	4,200	21.00	5,710	28.55	3,970	19.86	14,550
C	100.00	3,000	15.00	6,210	31.05	8,750	43.75	4,080	20.40	11,060	55.27	40,500
Total	52.38	20,000	100.00	20,000	100.00	20,000	100.00	20,000	100.00	20,000	100.00	73,275
FOURTH PERIOD												
A	40.00	10,000	50.00	9,320	46.60	7,100	35.50	10,210	51.05	5,750	28.76	21,800
B	66.67	7,000	35.00	4,470	22.35	4,570	22.85	5,710	28.55	4,620	23.09	17,500
C	100.00	3,000	15.00	6,210	31.05	8,330	41.65	4,080	20.40	9,630	48.15	36,500
Total	61.90	20,000	100.00	20,000	100.00	20,000	100.00	20,000	100.00	20,000	100.00	75,800
FIFTH PERIOD												
A	50.00	10,000	50.00	9,320	46.60	7,240	36.20	10,210	51.05	6,400	31.98	24,625
B	83.33	7,000	35.00	4,470	22.35	4,915	24.57	5,170	28.55	5,100	25.49	19,625
C	100.00	3,000	15.00	6,210	31.05	7,845	39.23	4,080	20.40	8,500	42.53	32,750
Total	71.43	20,000	100.00	20,000	100.00	20,000	100.00	20,000	100.00	20,000	100.00	77,000
SIXTH PERIOD												
A	60.00	10,000	50.00	9,320	46.60	7,330	36.65	10,210	51.05	6,860	34.32	26,550
B	100.00	7,000	35.00	4,470	22.35	5,315	26.58	5,710	28.55	5,510	27.54	21,300
C	100.00	3,000	15.00	6,210	31.05	7,355	36.77	4,080	20.40	7,630	38.14	29,500
Total	80.95	20,000	100.00	20,000	100.00	20,000	100.00	20,000	100.00	20,000	100.00	77,350
SEVENTH PERIOD												
A	70.00	10,000	50.00	9,320	46.60	7,846	39.23	10,210	51.05	7,600	37.99	28,000
B	100.00	7,000	35.00	4,470	22.35	5,105	25.52	5,710	28.55	5,210	26.05	19,200
C	100.00	3,000	15.00	6,210	31.05	7,050	35.25	4,080	20.40	7,190	35.96	26,500
Total	85.71	20,000	100.00	20,000	100.00	20,000	100.00	20,000	100.00	20,000	100.00	73,700

enough it also provides probably as good an index to the current relative value of the property as can be found and as such is eligible for use as a factor expressing an acreage adjustment to compensate for differently productive acreage.

Producing Unit

Reference has been made to the producing unit. This is understood to mean that property or portion thereof which may be considered as a unit for the purpose of equalizing drainage. There are many oil fields having large irregularly shaped properties together with many smaller properties. It is often necessary to arbitrarily divide the large property into units having approximately the same average well potential as the adjoining properties. Hence, a property may consist of several units, each of which is individual for proration purposes.

Proved Acreage vs. Reserves

It has been frequently pointed out that it is fundamentally unjust to give the worst acreage of the field the same rating for proration purposes as the best acreage. This is true despite the fact that better structural position may not mean greater ultimate recovery, especially if structurally inferior properties are developed first. The areal extent of a property is satisfactory for use in determination of the adjusted average potential of the property but has only a secondary bearing on the actual recoverable reserves of the property. It is urged, therefore, that the portion of a field allotment which is not prorated on the basis of potential production be prorated on the basis of the recoverable reserves of each property or some satisfactory equivalent.

It is well known that oil reserves are fugitive in character and depend as much upon the future rate of depletion of adjacent properties as upon the amount of oil actually present at any one time. There are many and various methods of estimating recoverable reserves but there is a singular lack of uniformity in the results obtained by using different methods. What is needed for proration purposes is some factor which will serve as an index to the relative worth of the property at the time of allocation. This factor should be of easy derivation and accurate enough to justify its use.

Factor of Relative Worth

If all operators in a field practice a uniform well-spacing program the adjusted potential or reserve index previously mentioned furnishes an excellent basis for the comparison of the relative worth of different properties. However, there is the widest kind of variation in well-spacing in fields of the town-lot class and it is futile to use acreage as any component of a factor meant to furnish an index of the reserves of a town-lot well. To give recognition to an existing fact but not to condone an uneconomic practice it is suggested that the factor of relative worth for all fields having irregular or nonuniform well-spacing be obtained by multiplying the average well potential of the wells already completed on a producing unit by the number of proved normal locations. The number of normal locations on a property may be readily ascertained by reasonably assuming that the spacing of wells already completed will be the rule on the entire property.

This is a detail which does not concern fields of large acreage and uniform development but it is a vital matter for town-lot fields where the problems of proration are particularly intensified. As pointed out in the case of the reserve index, any factor obtained by combining average well potential with either acreage or locations may be considered to be either a substitute for potential or an adjustment for variable areal productivity and as such may be reasonably offered as a satisfactory basis of proration and in fact will often answer every practical purpose.

Degree of Development

In many fields there are properties almost identical except in degree of development. Two adjoining properties may have the same acreage, the same relative worth or the same reserve index; yet one property has twice as many wells and twice the potential of the other. Possibly one property was developed too rapidly or the other one too slowly but the fact remains that for the time being at any rate, one property will produce more oil than the other one unless some arbitrary power decrees equal production from both properties.

Common sense and good business judgment require at least a partial defense of invested capital even though the rate at which the investment was made might not be justified. A logical analysis of the problem thus presented indicates that the average degree of development of the field at the specified time should be the basis of making adjustments for the over-development or under-development of various leases. A property developed above the field average should receive a partial but not complete reward for its additional investment and likewise an under-developed property should receive partial but not complete credit for its undrilled acreage or relative worth.

Sliding Scale Proration

By definitely setting aside certain portions of the field allotment for distribution according to potential production and according to proved acreage the first step has been taken toward providing for an equitable proration wherein the relative worth of all properties is the basic factor but where reasonable credit is given to capital investment as well as to delayed drilling.

The degree of development of a field is the percentage of the field allotment to be distributed on the basis of potential production. In this case the total potential of a producing unit should be used because it is the only factor which makes it possible to introduce a credit for investment with varying success.

The remainder of the field allotment should be prorated on the basis of proved acreage; relative worth factor or reserve index factor as conditions in the field may dictate. The two allotments thus obtained for each producing unit, when added give the total allotment for the unit and this total allotment will be found to be some amount, or percentage of the field quota intermediate between allotments obtained by proration according to acreage and proration according to potential. The exact position of the sliding scale allotment will depend on the relative development of the unit.

Marginal Well Consideration

In some fields proration, no matter how carefully designed, will succeed or fail according to its treatment of the marginal well. While some arguments to the contrary are presented, the present trend of proration is distinctly toward some degree of protection or special consideration for marginal wells. For practical purposes, the marginal well or property is one which cannot make the average curtailment required of the field and still remain in operation.

In many cases the marginal well problem is only the old financial problem of making ends meet. Experience has shown us that as a general rule wells will be kept on production as long as the revenue obtained is greater than the actual cost of operation. The cost of operation at this desperate stage of the well's existence does not include any amortization of investment nor any excessive overhead but may include depreciation and interest charges if there are such.

On this basis of reasoning an effort has been made to develop a rule for the special consideration of marginal wells that will give them a minimum allotment sufficient to permit their continued operation under average conditions.

An example of the method used in determining the minimum allotment of wells

(Continued on Page 78)

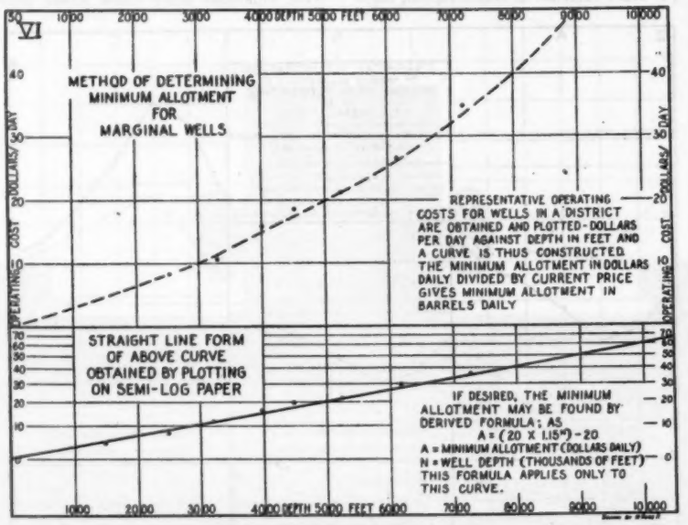
VI
METHOD OF DETERMINING MINIMUM ALLOTMENT FOR MARGINAL WELLS
REPRESENTATIVE OPERATING COSTS FOR WELLS IN A DISTRICT ARE OBTAINED AND PLOTTED - DOLLARS PER DAY AGAINST DEPTH IN FEET AND A CURVE IS THUS CONSTRUCTED. THE MINIMUM ALLOTMENT IN DOLLARS DAILY DIVIDED BY CURRENT PRICE GIVES MINIMUM ALLOTMENT IN BARRELS DAILY
STRAIGHT LINE FORM OF ABOVE CURVE OBTAINED BY PLOTTING ON SEMI-LOG PAPER
IF DESIRED, THE MINIMUM ALLOTMENT MAY BE FOUND BY DERIVED FORMULA; AS
A = (20 X 1.15^N) - 20
A = MINIMUM ALLOTMENT (DOLLARS DAILY)
N = WELL DEPTH (THOUSANDS OF FEET)
THIS FORMULA APPLIES ONLY TO THIS CURVE.
DEPTH IN FEET
OPERATING COST DOLLARS/DAY

Plate 4—The daily production allotments of the three properties as determined by five different methods for seven successive periods is here shown graphically. The differences between the five methods are not as apparent as in Plate 4 but it is notable that the great increase in potential on Property C due to excessive drilling resulted in only nominal and temporary increases in the property allotment. The effect of large acreage in maintaining the allotment of Property A is also apparent.

Diesel Electric Power for Drilling

Problem of Paralleling Discussed. System of Control Described. Protection Against Overloading. Cost of Operation

By B. L. Moore
Electrical Engineer, Humble Oil & Refining Co.*

In dealing with the subject of Diesel electric power for drilling it is necessary to review briefly the types of Diesel electric power and the methods of using it. There are, of course, only two types of commercial electric energy, namely alternating and direct current, both of which are being used for motive power in drilling oil wells.

The A.C. energy furnished by power companies is so commonly used as to warrant no discussion whatever; however, when this form of electric energy is generated in small quantities in isolated districts by Diesel engines as prime movers, it is a different question. Very little, if any, success has been the result of tests on such equipment prior to a few months ago. Since then there has been put in operation a high speed, approximately 400 k.v.a. Diesel electric A. C. generating plant for supplying energy to an ordinary 440-volt A.C. drilling equipment. As to the success of the tests on this equipment, we have been unable to gather any definite information. However, in general with this type of equipment there are two very difficult problems to solve, namely voltage regulation and paralleling of two or more machines. Proper voltage regulation is difficult by reason of the inherent characteristic of an A.C. motor to take a large quantity of low power factor current when started against load. This inrush of current pulls the voltage down, which in turn, retards acceleration of the motor, which in its turn lengthens the period of heavy current drain on the generator. Of course, when the voltage drops on the generator, the voltage regulator (which is indispensable) acts to bring it up again but unless the driller is far more careful in the operation of his controls than they as a rule are, the demand on the generator will be so far beyond its capacity that the voltage regulator cannot handle the situation and extremely sluggish and unsatisfactory operation is the result.

The problem of paralleling is probably not so difficult as the one just discussed but is quite difficult. It is really not difficult to parallel two A.C. generators provided the engines have good governors, but it is very difficult to keep them paralleled without excessive cross current between the two generators which tends toward oscillation which upsets the stability of the governors on the engines and conditions in general, with the result that the interlinking circuit breaker will go out, thereby interrupting service.

System of Control

Direct current Diesel engine generating sets employ the Ward Leonard system of control (which will be described later) and two types of generators, that is, accumulatively and differentially compounded. The accumulatively-compounded machines will not parallel satisfactorily under the load conditions to which they are subjected under normal drilling operations. As a consequence, these machines are operated in series when the combined output of the two engines is required for hoisting service. These machines, due to their accumulatively compounded fields have either a flat or an ascending voltage characteristic on any point of the controller. The generators are wound for 250 volts. The hoist motor has an armature good for 500 volts or more. On drilling operations both mud pump and hoist motors operate at 250 volts. When heavy hoisting duty is required the two generators are put in series with a resultant voltage of 500 at the motor which makes available for hoisting duty double rated speed and horsepower of drilling motor. There is only one disadvantage to this hook-up and that is there is nothing to limit the load that the driller can impose on the engines and, beyond any doubt, that is a matter of utmost importance.

The differentially compounded machines automatically parallel and due to their drooping voltage characteristics, they automatically protect the engines from any overload that the driller might inadvertently or carelessly impose upon them.

One of the above equipments was put in service in the delta country south of New Orleans in October, 1930, and has

(Continued on Page 81)

*Before Division of Production, A.P.I., Dallas, Tex.

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GENERAL OFFICES: CINCINNATI

Test in Somerset County, Pennsylvania

American Natural Gas Co. to Resume Operations There. Twelve Completions in Eastern Fields, Mostly Gas Wells

By Staff Correspondent

PITTSBURGH, Pa., June 6.—The American Natural Gas Co. has resumed operations in Somerset County of the Southwest Pennsylvania Field with a test on the Maust farm, north and east of the Texas School House which is west of the Stoyestown-Somerset Road. About a year ago the American Natural Gas Co., an operating company of the Wittmer Oil & Gas Properties, in Pennsylvania, completed a wildcat well in this county more than 15 miles from proven production. This wildcat operation was on the O. S. Miller farm near the Texas School House, west of the Stoyestown-Somerset Road about 3½ miles north of Somerset. At a depth of 2,550 feet and in what was presumed to be the Fifth sand, this well tested for between 900,000 and 1,000,000 feet of gas. A number of wildcat tests were drilled subsequently to the north, west and south of the test on the Miller farm and about 2 to 3 miles distant and, with the exception of one small pocket showing of gas, these operations were all dry. They were drilled to depth reaching 1,000 feet in excess of the depth of the discovery well. After the completion of these operations the American Natural Gas Co. abandoned operations for the year.

This region has long been condemned by geologists and considered unproductive. As to structural location, the gas well on the Miller farm lies on the west flank of the Negro Mountain anticline, three-quarters of a mile southeast of the center of the trough of the Somerset syncline and about 4¼ miles northwest of the crest of the above anticline.

Some 25 years ago a group of men combined to drill a well on the Miller farm in Quemahoning Township. The well struck considerable gas at about 2,600 feet but the well was drilled deeper in search for oil as gas had little commercial value at that time. At a depth of some 4,000 feet salt water was encountered which flooded the well and after a short time packed it off. Other wells were drilled but with no success.

Twelve operations ending in production of either gas or oil were reported from the Eastern fields. Seven gassers located as follows were reported: Six in the West Virginia Field and one in the Southeast Ohio Field. The three oil wells in the West Virginia Field had an initial production of 6 bbls. and the lone oil well in the Southeast Ohio Field has an initial production of one-half barrel, while the Southwest Pennsylvania Field's contribution is reported as a 3-bbl. producer. The West Virginia Field and the Southwest Pennsylvania Field each have four dry holes.

SOUTHEAST OHIO

In Muskingum County, the Atha Oil Co. completed its test on the W. H. Doty farm in Washington Township as a gas well, and Maggie M. Immel's No. 4 on the Frank M. Covey farm in Marshall Township, was completed as a half-barrel oil producer.

In Muskingum County, the Ohio Fuel Gas Co. has reached 3,400 feet in its test on the Lincoln Taylor farm in Wayne Township, Section 3. In Washington Township, Wehrle Co. has its test on the N. T. Coconis farm at the 3,650-foot level. Wilson Brothers have constructed a rig on their own property in Washington Township for a test. The Preston Oil Co. has moved its rig from the John C. Hicks farm in Perry Township, Section 16, after having reached a decision not to drill on this property. In Hopewell Township, Section 6, M. F. Whitehill has constructed a rig on the Boyer farm for No. 5 well.

WEST VIRGINIA

On the waters of Gragston Creek in Butler district, Wayne County, the Chartiers Oil Co. drilled its test on the W. W. Large farm to 2,064 feet. At this depth this well tested for 3 bbls. per day after being shot. The King Knob Gas Co.'s No. 4 well on the Payton Tingler farm in Murphy district, Ritchie County, was completed as a 2-bbl. producer, and the test of J. F. Deem and others on the Johnson heirs' property in the same district, was drilled to 1,760 feet at which depth it is a 1-bbl. well. The Johnson heirs' property is on the waters of Mayberry Run.

In Cabell County, the General Gas Co.'s test on the William Kinnard farm is a very fair gasser from the Berea sand and Brown shale. The Kinnard farm is on Lee's Creek in Grant district. The Dickinson Oil & Gas Co. has a very fair gasser in its test on the J. C. Harvey farm in Kermit district, Mingo County. This well was completed after being drilled to 3,478 feet. Doctor Hively and others completed their drilling operations in their second test on the William M. Hall heirs' farm in Calhoun County, Washington district, in salt at a depth of 1,409 feet for a small natural gasser. The United Fuel Gas Co.'s No. 4,262 came in on the J. W. Ashbough farm in Loudon district, Kanawha County at 5,096 feet as a very light gasser.

The Hope Natural Gas Co. completed the deeper drilling of its No. 165, located on the Sarah E. Tennant farm in Clay district, Monongalia County, at a depth of 3,339 feet in the Fifth sand where it is a light gasser. Null and Moorehead's test on the W. M. Eakins farm in Church district, Wetzel County, was brought in as a gasser at 2,967 feet.

In Hancock County, Freshwater Brothers completed their test on their own property in Clay district as a dry hole. Paul Weekley and others have decided to abandon their test on the Gay M. Sergent farm in Spencer district, Roane County, after drilling it to 2,347 feet in the Berea sand where it was found dry. Drilling operations in No. 4,279 of the United Fuel Gas Co. on the Tell McDonald farm in Center district, Calhoun County ended at 2,003 feet and in the Injun sand as a dry hole. The second test of the Gilco Oil & Gas Co. on the Ernest Woofter farm in Troy district, Gilmer County, ended in a dry hole at 2,685 feet.

Drilling in West Virginia

In Boone County the Owens-Illinois Glass Co., the Pure Oil Co. and Godfrey L. Cabot continue quite active in their operations. In Peytonia district the Owens-Illinois Glass Co. is shut down in its No. 9 on the Safe Deposit & Trust Co. tract at a depth of 1,813 feet, and on the Broun-Cochran tract has constructed a rig for No. 7. In Scott district the same company has constructed rigs and has the tools on the ground for a second test on the S. M. Wheeler farm and for No. 21 on the Cassingham and others' property. In Washington district it has selected location for a test on the Letha Myers farm and on the Little Coal Land Co. tract. This same company is constructing a road to the location selected for No. 20 on the Peytonia Coal Land Co. tract in Sherman district.

The Pure Oil Co. has driven No. 52 on the Federal Coal Co. tract in Sherman district, Boone County, to 2,328 feet, and No. 53 is drilling at 289 feet on the same tract. It has made location for No. 42 on the L. R. and P Tract "A" in the same district, and has a rig standing on the Williams Coal Co. tract for No. 256 in the same district.

Godfrey L. Cabot's operations in Boone County are centered in Sherman district, and consist of the following: The selection of a location on the Central Trust Co. tract, the selection of a location for a second test on the J. Q. Dickinson farm, and like action for No. 31 on the Federal Coal Co. tract. This operator has constructed rigs for Nos. 46, 47 and 48 on the Federal Coal Co. tract. A rig has also been constructed for No. 5 on the Mary Dickinson property.

The Pond Fork Oil & Gas Co. is spudding in its No. 11 well on the Cole & Crane Real Sstate Co. tract in Washington district, Boone County, at a depth of 150 feet. The Owens-Illinois Glass Co. has constructed a rig and has the tools ready for the beginning of operations in No. 21 on the Peytonia Coal Land Co. tract in Sherman district.

In Lincoln County, Frank Yates is shut down in his test on his own property in Harts Creek district, after drilling it to 1,810 feet. In Jefferson district the David Gas Co. is drilling in its No. 4 on the David Miller farm at the 1,200-foot level, and in the same district the Jefferson Gas Co. has part of the material on the ground for No. 4 on the Richard Miller farm. In Carroll district Louis R. Sweetland has selected a location for a second test on his own property. The Woodyall Gas Co. has sunk its No. 3 on the James and Isiah Adkins farm to 2,020 feet, and in the same district Union, A. F. Morris, trustee, is drilling in his test on the Matthias Adkins farm at the 1,800-foot level. The Martin Gas Co. has driven its test on the Sherman Johnson farm in Sheridan district to 1,100 feet, and in Washington district the Cambridge Gas Co. has its test on the McCorkle lots drilling at 608 feet.

The Manufacturers Light & Heat Co. has a fishing job on hand in drilling its No. 2,190 on the A. and M. E. Jolliffe farm deeper. The Jolliffe farm is in Clay district, Wetzel County. The same company has sunk its second test on the J. M. Newman farm in Proctor district to a depth of 2,350 feet. In Magnolia district R. O. Hennen and others are drilling at the 2,900-foot level in their test on the Yeater and Pyles property. The deeper drilling of the Burton Development Co.'s test on the Etta Kerns farm in Church district has reached 3,000 feet. The Lomie Oil & Gas Co. is constructing a rig on the Lomie Hunt property in Church district. The test of the Shimwell Oil & Gas Co. on the W. J. Price farm in Grant district is shut down after having been drilled to 3,053 feet.

In Mingo County the Ohio Southern Gas Co. has a rig standing on the Cowden and Workman property in Harvey district for a test. The Riverhead Gas Co.'s No. 10 well on the William R. Nelson heirs farm in Washington district, Boone County, is drilling at a depth of 1,855 feet.

SOUTHWEST PENNSYLVANIA

Drilling operations in the Southwest Pennsylvania Field were productive of dry holes and but one oil well. No gassers were reported. The Union Gasoline & Oil Corp.'s test on the George Newland

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WELL IN SOUTH TURNER VALLEY CONTINUES CENTER OF INTEREST

By Victor Lauriston
Staff Correspondent, Canadian Fields

CHATHAM, Ontario, June 6.—In the North Central Turner Valley area, Richfield Petroleums' No. 2, LSD 12-13, Section 13-20-3w5, which got a small production 353 feet in the lime at 5,070 feet, is cleaning itself out after a shot which largely increased the wet gas production. The well has been making between 50 and 60 bbls. a day on intermittent production, and a definite production test when it has cleaned itself out will likely show a good commercial well.

In the north end of the field, United Oils' No. 4, LSD 2, Section 24-20-3w5, is drilling at 5,750 feet in the belemnite horizon about 50 feet above the lime. This is the only test now active in the north field. Model Oils' No. 1, LSD 8, Section 22-20-3w5, has increased its average production to 183 bbls.

Tests for Merland Area

The great center of interest in South Turner Valley is Merland Oil Co.'s No. 1, now being completed by Imperial Oil, Ltd. Merland's No. 1 is a big well, definitely among the largest wet gassers in the entire field, with a measured flow of 25,000,000 feet. Owing to intermittent freezing no test of crude naphtha recovery has been made, and diamond drill rig has been installed to clean out the hole and establish steady production. Potential recovery is estimated between 500 and 600 bbls. Under the agreement between the two companies, Imperial Oil, Ltd. is to drill a total of five wells on the Merland acreage, the Merland shareholders to get 52½ per cent of production, Impeial Oil, Ltd., 35 per cent and Calgary & Edmonton Corp., 12½ per cent royalty. The Merland holdings comprise 320 acres in Section 27-18-2w5, in the extreme south end of Turner Valley. No. 2 test will probably be started as soon as No. 1 has been placed in steady production.

Following the Merland strike, a number of other companies are showing activity in the far south. Freehold's No. 4 Marjon, LSD 9, Section 28-18-2w5, is temporarily shut down at 350 feet. Royal Canadian Oils, Ltd., of Calgary is reported planning to drill a test on acreage in Section 22-18-2w5, south of the Merland producer, the acreage being reported on by E. H. Cunningham-Craig, consulting geologist; Russell V. Johnson and Stanley J. Davies.

Clean Out Royalite Gusher

In the Central Turner Valley, Royalite Oil Co.'s No. 4, LSD 4, Section 7-20-2w5, is to be refitted in an effort to restore production. No. 4, the first deep lime producer, blew into production in October, 1924. No effort will likely be made to deepen the hole, as there are two strings of tools at the bottom. Efforts were made to cap the well when it was first brought in, with the result that the accumulated preasure lifted the control head and casing over the crown block. The well continued to produce with damaged casing till October, 1929, when it pinched out, though it has come back into production intermittently since. Aggregate production of the well is esti-

(Continued on Page 90)

Interesting Work in Old Lima Field

Development in Progress West of Bowling Green and Near McClure and Grand Rapids, Ohio. Kentucky Completions

By George A. Whitney
Staff Correspondent, Central West Fields

FINDLAY, Ohio, June 8.—In the old Lima Field there is some interesting work about 15 miles west from Bowling Green and approximately 35 miles southwest of Toledo, and west and north of the old lines of the Trenton Rock area. Just a short distance from McClure and only a short distance out of Grand Rapids, Ohio, there is an interesting development under way, as the Lake Shore & Southwestern Metal Co., Inc., made a contract for the drilling of 13 holes in Henry County, of which 6 have been completed, showing fairly nice gas producers ranging from 300,000 to 750,000 feet. A showing of oil was found in the test on the Francis J. Bell farm, Section 13, Damascus Township, Henry County, but the well has not yet been given a test to prove its worth as an oil producer. It also has a fair volume of gas. No. 1 on the O. Van Tassell farm, Section 22, is showing for 500,000 feet of gas and has also a showing of oil. When the other six or seven wells contracted for are completed, the owners expect to have sufficient gas to furnish Napoleon and near-by towns, as well as Grand Rapids. The Van Tassell well is showing better than any of the first half dozen drilled. Same company is drilling No. 1 J. E. Hockman farm, Section 23, Damascus Township, and No. 1 Frederick Schafer farm, Section 23, Monroe Township, same county. The Van Tassell well is about a half mile east of McClure. No. 1 on Chopper farm is also reported under way.

The outstanding completion of the week in the Lima Field is the Jupiter Oil & Gas Co.'s test on the George A. Matthews farm, Section 18, Pleasants Township, Hardin County, which found its oil and gas in the Trenton lime from 1,365-74 feet and produced 100 bbls initially along with 450,000 feet of gas. In Cessna Township, same county, the Commonwealth Gas Corp. is starting a test on the Carl Searson farm, Section 8. Neely & Underwood abandoned their location on the John Orth farm, Section 1, same township, and also abandoned the location they made on the P. L. Gardner farm, Section 31, Blanchard Township, same county.

About 5 miles east of Carey, the Tiffin Industrial Gas Co. is drilling on the Martha and Edward Calmes farm, Section 17, Tymochtee Township, Wyandot County, and Jones & Coyle are reported shut down at 1,526 feet in No. 1 Charles Hoepp farm, same section. In Crawford Township, same county, Harpster and others are reported to be starting a test on the Lewis C. Beis farm, Section 11, and about 2 miles northeast of Carey, Jeffries and others' second test on the George P. Jones farm, Section 24, same township, and about 3 miles east of Carey, is in the Trenton from 1,300-40 feet with a showing.

Eilerman Oil Co.'s No. 2 George W. Treiber farm, Section 26, Cynthian Township, Shelby County, is reported good for 5 bbls.

A. A. Lauber's test on the J. W. Long farm, Section 33, Butler Township, Mercer County, is a gas well with 8,000 feet at 675 feet.

In Van Wert County, the Ohio Oil Co. abandoned No. 7 Evan T. Morgan farm, Section 21, Jennings Township. Albert Huenke, Jr., and others abandoned Nos. 1, 2 and 6 C. H. Koop farm, Section 34, St. Marys Township, Auglaize County. The Ohio Oil Co. abandoned Nos. 1, 2 and 3 Adam Louth farm, Section 25. Spencer Township, Allen County.

CENTRAL OHIO

Seven completions were reported in the Central Ohio Field, three being dry holes and four gas wells. In Ashland County, the Ohio Fuel Gas Co. has a gas well in No. 1-5,466 Albert Stackhouse farm, Section 16, Orange Township. Same company is drilling a second test on the Juliaette Barnhill farm, Section 12, same township.

In Medina County, Chatham Township, the Edson Son's Co. has a 15-bbl. initial producer in No. 15 on the Archie E. Packard farm, Lot 20, at 365 feet.

In Ashtabula County, Conneaut Township, Beeghley-Schaffer Oil & Gas Co. has a light gas well on the Ida Maki farm, Lot 61, the gas being found in the shale formation at a total depth of 650 feet.

In Coshocton County, Perry Township, the Preston Oil Co.'s No. 1-1,482 C. A. Giffin farm. Section 5, is reported dry from 3,244-95 feet.

In Summitt County, Green Township, the East Ohio Gas Co. has a fair gas well on the C. C. McCue farm, Section 19, at a total depth of 4,020 feet, which is the Clinton lime.

In Licking County, E. J. Edmonds' test on the J. W. Atwood farm, Section 8, Perry Township, is reported dry from 672-82 feet. Wehrle Gas Co. is drilling No. 1 F. H. Stall farm, Section 15, McKean Township, also starting No. 1 Darwin Fidler farm, Lot 26, Bennington Township, same county. Same company is drilling on the Burton Townsend farm in the Third quarter in Washington Township, Muskingum County. Fetty & Loushery is drilling No. 2 Freeman Russell farm, Section 1, Highland Township, Muskingum County.

In Athens County, York Township, Nelsonville Gas Co. is drilling No. 1 Eileen Stratton farm, Section 5. Rose-Yoeman is drilling No. 18 J. L. Winner farm, Section 4, Rome Township. Bode and others are drilling No. 2 P. R. Devore farm, Section 25, Waterloo Township.

In Stark County, Medford Oil & Gas Co. is drilling No. 3 John C. Easterday farm, Section 35, Jackson Township. Brendall and others are starting No. 3 Lake Cable Co. land, Section 14, and Smith and others are starting No. 1 W. Rudy farm, Section 7. East Ohio Gas Co. is drilling No. 1 Ink Heirs farm, Section 30, Plain Township, same county.

In Fairfield County, Richland Township, Sturm and others have a light gas well in the Berea sand in No. 1 O. F. Basore farm, Section 32, from 763-74 feet.

In Guernsey County, Jackson Township, W. C. Urban and others have a light gas well on the Frank Fabion farm, Section 13, where the top of the Berea was found at 1,076 feet and gas pay from 1,076-94 feet.

In Belmont County, Somerset Township, A. J. West is drilling No 3 F. S. and Nellie Rossiter farm, Section 35.

In Geauga County, Parkman Township, McClay Brothers found a dry hole on the M. W. Fram farm, Section 12, in the Clinton from 4,107 to 4,116 feet. In this hole the Niagara was found from 4,038-49 feet.

INDIANA

In northwestern Indiana the wildcat drilled by the Dome Oil Co. near Highland, Lake County, has a dry hole at close around 5,000 feet. This test did not indicate either shallow or deep sand pays, the hole being deep enough to test most of the known producing sands.

Casing and drive pipe have been delivered at the wildcat of H. J. Hauck and others on the John Siddles farm, SW Section 4, Lincoln Township, Laporte County, and spudding has started. This well, according to reports, is being drilled for natural gas, but the owners say they will be perfectly satisfied if oil is found, as it is far from any known test in that part of the State, being 7 miles south of New Carlisle and 15 miles southwest of South Bend.

In the Princeton Field, C. C. Taliaferro, Jr., drilled a dry hole on the H. Robinson farm, Section 1, Veale Township, Daviess County, near where Hartman and others drilled several producing oil wells several years ago.

Charles W. Scott is drilling No. 3 on the C. L. Davis Np. 2 farm, Section 14, Turman Township, Sullivan County. No report has been made as to the test James C. Ellis and others are drilling on the William Jewell farm, Section 29, Curry Township, same county, nor the test being drilled by the Shell Petroleum Corp. on the Robert A. Bond farm, in Busseron Township, same county.

Conyers and others are drilling No. 4 on the Lee Aders farm, SE SW Section 4, Clark Township, Perry County, in southern Indiana, where some recent large oil producers have been found. Bugg & Walters are drilling on the Edward Cassidy, Section 4, Leopold Township, same county.

KENTUCKY

But few completions were reported from any area of Kentucky, and the completions were well scattered over a large area. Three wells were reported from Hart County, H. Z. Clark and others' Nos. 1 and 2 on the Babe Wilson farm, being reported at 100 bbls. each initially, while J. B. Miles and others' No. 1 Less Smith farm, also in the Legrande Field of the same county, was reported dry.

Reports are that Ellis & Young's deep test near Rochester, in Butler County, proved a dry hole.

Petroleum Exploration Co., according to reports, brought in a nice gas well in No. 5 on the North Jellico Coal Co.'s tract, in the Barboursville area of Knox County, in the eastern part of Kentucky, also a fair gas well in No. 1 on the W. S. Allen farm, in the Manchester Field of Clay County.

The H. & K. Producers Co.'s No. 5 H. F. Lee, near Weir, in the Greenville Field of Muhlenberg County, after given a shot, indicated a 25-bbl. initial producer and additional wells will be drilled as soon as conditions show an improvement.

Drilling operations in the Owensboro Field of Western Kentucky are almost at a standstill and the activity in Hart and Barren Counties has not been as great during the past few weeks as it was a couple of months ago.

Around 5,000 bbls. of oil per day are being taken from the wells in the Owensboro Field. The peak production is 10,-000 bbls. per day.

Nine Years' Production

From 1922 through 1930 Western Kentucky's oil production totaled 21,826,707 bbls. which brought $34,860,558, according to statistics compiled by the state geologist. While most of Western Kentucky's petroleum production prior to 1926 was secured in the Bowling Green Field, from 1927 until 1930, the Owensboro Field led in this part of the State. The production for Western Kentucky during the four years the Owensboro Field was in the lead amounted to 14,-861,961 bbls., approximately two-thirds of the total amount produced in the nine-year period.

The production and value by years follows:

Year—	Barrels	Value
1922	1,824,612	$3,996,039
1923	1,369,346	2,324,732
1924	1,189,289	2,050,964
1925	1,268,310	2,500,961
1926	1,313,239	2,811,918
1927	2,238,522	3,184,115
1928	3,672,459	5,402,562
1929	4,513,333	7,727,796
1930	4,438,648	5,861,480
Total	21,826,707	$34,860,558

DRAKE WELL MEMORIAL CONTRIBUTIONS WELCOMED

Contributons to the fund being raised to establish a park at the site of the Drake well near Titusville, Pa., have not been sufficient thus far to meet the expenses involved. Contributions of any amount may be sent to W. R. Boyd, Jr., chairman of the committee in charge of the project, who says the aid thus given will go far to lighten the load on the shoulders of the men who have assumed the responsibility of completing the undertaking. The accompanying subscription blank may be used.

DRAKE WELL MEMORIAL PARK FUND

....., 1931

I hereby subscribe $..... toward the fund for preservation of the Drake well site, to be paid on ....., 1931, and ....., 1931.

Cash herewith, $.....

Signature.....

Address.....

.....

Fill out and mail to W. R. Boyd, Jr., American Petroleum Institute, 250 Park Ave., New York, N. Y. Make checks payable to "Drake Well Memorial Park Fund."

Field Problems and Their Solution

EDITED BY THOMAS F. SMILEY

In order that men connected with the drilling, producing and transporting branches of the petroleum industry may procure quickly a solution of many problems confronting them from time to time in their work, The Oil and Gas Journal has arranged with leading engineers and other recognized authorities to answer questions submitted by readers of this publication pertaining to the work of drilling and producing crude oil and transporting this product.

Everyone is invited to submit questions freely. These questions will be submitted to proper authorities by Mr. Smiley, who edits the page, and answers, based on the best available information, will be published. Each question should give as much detail as possible, especially where it relates to matters where depths of sands, types of sands and operations on adjoining properties would have a bearing on the problem involved. The source of all questions will be considered as confidential and only initials will be published in connection with the question.

In this connection, The Oil and Gas Journal will be glad to publish articles from field men who have devised new methods or practices which are improvements.

In case an immediate answer is important, one will be given by mail if the writer requests it.

PROPER DRESSING OF THE BIT

Some tool dressers tell me that it is the best plan to heat a bit slowly and some tell me it makes no particular difference. What is the best practice, please? I would be glad to have any other pointers you can give me about tool dressing, for I am trying to learn all I can about this job.—T. T. E.

About as satisfactory answer as can be given to your question in small space is contained in the following rules, quoted from a publication of the Oil Well Supply Co.:

Don't heat bit steel rapidly; a slow fire is much better.

Don't try to heat a bit for dressing or tempering without turning it over in the fire.

Don't deliver too great an air blast into the forge—heavy, thick scale results from such practice, injures the steel and affects hardening possibilities.

Don't fail to keep the water courses in dressed end of a bit entirely open. Metal which is driven into the water course in the dressing operation should always be cut out with chisels of circular form.

Don't fail to inspect a newly-dressed bit before hardening to make sure that the cutting edge is dressed evenly. Bits with one corner in advance of the other are responsible for many broken pins.

Don't attempt to harden bits from the dressing heat. It is always best to allow a bit to cool after dressing, then reheat again slowly and uniformly for hardening.

Don't discount the importance and value of always keeping the slack tub clean. Clean running water under controlled pressure in the slack tub will insure best results in hardening.

Don't ill-treat your bits if you expect good results.

PULL EXERTED ON CASING

The following question grows out of a discussion here. A total of 6,513 feet of 9⅝-inch, 40-pound, 10-thread casing was set in a hole and an attempt was made to lift the casing off bottom. The casing became frozen or stuck on bottom and in pulling it stretched 15 feet. At that point the weight indicator registered 76 points. Ten lines of 1⅛-inch cable and one dead line were used. The entire string was full of mud. The question is: What pull was exerted on the casing?—N. W.

With the information provided the following calculations are made:

$$E = \frac{Pl}{Ad}$$

E is modulus of elasticity in pounds 29,000,000.

P = Pressure in pounds due to load.

l = Length of pipe in inches (78,156 inches).

A = Area of pipe walls (11.453 square inches).

d = Stretch in pipe in inches (180 inches).

Substituting and solving for P it is found that the load applied to stretch this pipe 15 feet would be approximately 764,739 pounds.

If it is decided to determine the load applied by using the 76 points registered on the weight indicator with ten 1⅛-inch lines and one dead line, it is found by the table provided by the manufacturer that the indicated load was 306,960 pounds.

There is such a wide difference between these two figures that it appears something must have happened other than stretching the casing and it would seem, from the information at hand, that a great part of this supposed 15-foot stretch is actually made up of straightening the casing in a crooked hole.

Another reason for suspecting that this seeming 15-foot stretch could not actually have occurred lies in the elastic limit and ultimate strength of the steel making up this casing. While the grade pipe used is not given by referring to Table 2 in the A.P.I. pipe specification it is found that the tensile strength in pounds per square inch for seamless casing is:

Grade A 48,000 pounds
Grade B 70,000 pounds
Grade C 75,000 pounds
Grade D 95,000 pounds

The same table gives the yield point in pounds per square inch for the same grades of casing as follows:

Grade A 30,000 pounds
Grade B 40,000 pounds
Grade C 45,000 pounds
Grade D 55,000 pounds

As the unit stress of this casing will equal

$$\frac{764{,}739}{11.453} = 66{,}750 \text{ pounds approximately,}$$

it would appear that the yield point for any grade of seamless casing would be passed, and therefore the stretch in the string would be permanent and if the tension of the lines were released the top of the casing would remain at the point where it was when the pressure was last applied.

The word "stretch" as used by the driller is understood to mean the degree of movement in a string of pipe both upward and downward and not permanent stretch. Unless this is an exceptionally good grade of casing it would seem that it would have passed both ultimate and yield point figures as given above in stretching 6,513 feet of casing 15 feet and would have parted.

On the other hand it is not difficult to assume that the full length of pipe might straighten out 15 feet or more in a crooked hole when a pull was applied to it and this might be apparent at the derrick floor as "stretch."

Considering the stress as figured from the indicator reading, or 306,960 pounds with 76 points on the dial and ten 1⅛-inch cables, this would give a unit stress figure of only 26,800 pounds per square inch which is not enough to equal the yield point of Grade A casing and consequently no stretch or elongation would have occurred in the string; that is, no permanent stretch, and consequently no apparent lengthening of the string at the derrick floor.

WHY WAS IT CALLED THAT?

CYCLOPEAN CONCRETE

Cyclopean concrete is concrete in which big field stones or cobblestones are embedded. The name becomes clear when it is remembered that the word "cyclopean" comes from "Cyclopes," a mythical race of giants, and thus is employed to imply huge, massive character. Cyclopean concrete is used sometimes in such structures as dams, piers, retaining walls and big foundations.

CONNECTICUT'S DEEP WELL

I quote the following from "Petroleum and Its Products," by Boverton Redwood, edition of 1906: "The deepest well in the United States is said to be one drilled for water in Connecticut, reaching the depth of 6,004 feet with a diameter of 6 inches. The second deepest well was in Pennsylvania, 5,575 feet." I think I know of the well in Pennsylvania, but apparently those who should be posted on the location or existence of such a deep hole in the ground at so early a date in Connecticut know nothing of it. The Connecticut Geological Survey has no data. Although I am a native of that State, I left it before I was taking any interest in such matters. I am interested now in tracing the evolution of drilling as a part of oil history and would be obliged if you could verify Redwood by date and location.—H. G. B.

In several reports of the United States Geological Survey on water supply in the United States reference is made to wells in Connecticut, and in one report a complete list of wells as deep as 600 feet is given. This report, published in 1904, does not mention the deep hole to which you refer. It therefore is assumed that it must have been drilled between that date and 1906.

Page 24 of United States Geological Survey Bulletin 149, "United States Water Supply Tables," shows in a table of borings in Connecticut that a well was drilled in Windham County, Putnam Heights, to a total depth of 6,004 feet and finished with a 6-inch hole. This well made about 2 gallons of water per minute and the height of water was —4 feet.

No further reference is made to this deep hole, but as it is accurately located it should not be difficult to obtain further data either from the United States Geological Survey or by writing to someone near the site of the well.

STUDY OF SOIL CORROSION

After reading your answer to O. S. E.'s question about the costliness of pipe line corrosion in which you told about the investigation being made by the Bureau of Standards, I want to ask you if anything has been determined yet by this investigation. For instance, is it known yet whether the character of the soil, the kind of material used in making the pipe or the type of protective covering (if any) used is the most important factor in controlling corrosion? It seems as though something along this line should be known after years of experimentation.—O. O. R.

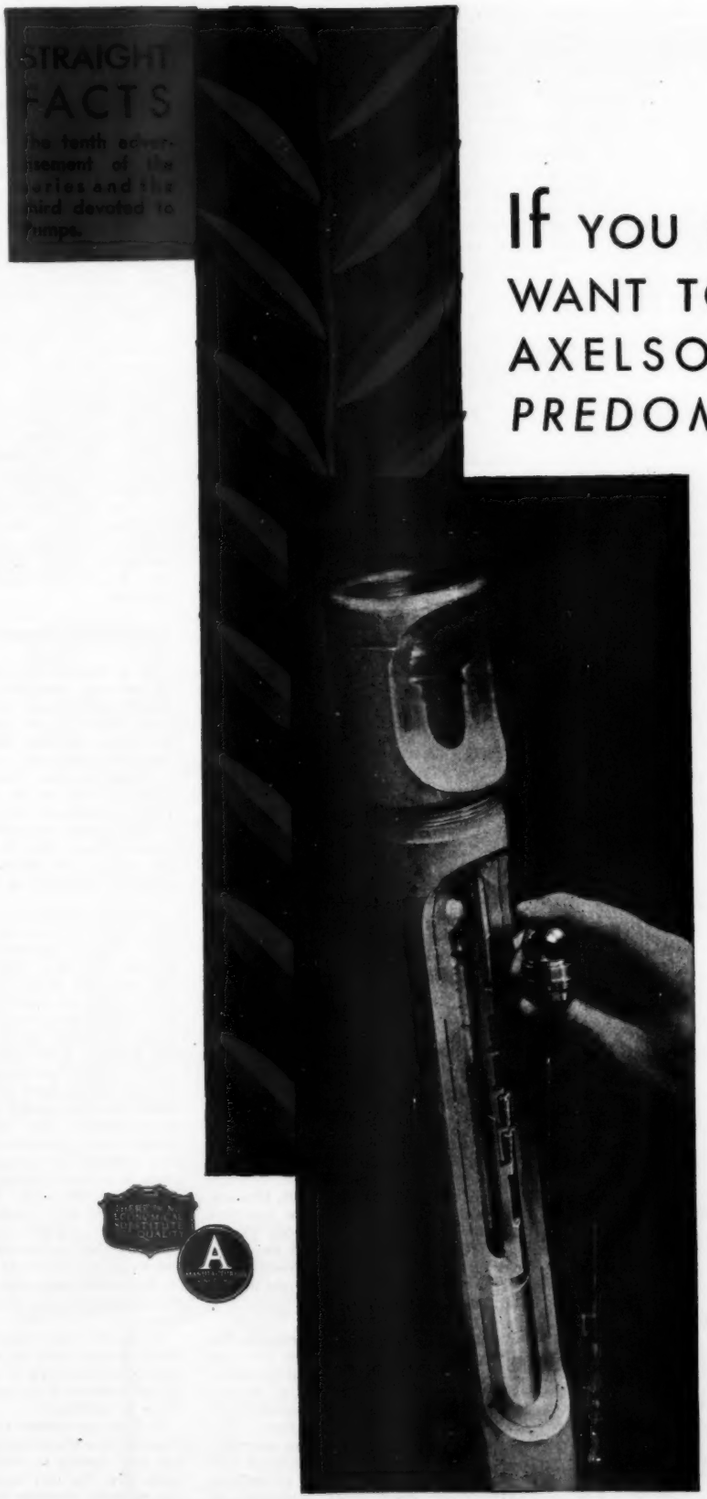
Your question is answered as follows by K. H. Logan, of the Bureau of Standards, which is conducting the investigation:

"The work on methods of identifying corrosive soils has made considerable progress. The soil corrosion investigation, although incomplete, has furnished a large body of corrosion data. It has shown clearly that for at least the first eight years after a pipe line is laid the character of the soil rather than the type of ferrous pipe material controls the rate of corrosion. During this period one material or another shows some apparent superiority for local conditions, but the material which appears best under one condition may appear worst under another, and to date the differences between the average performances of the several materials tested are small. It is possible, however, that as corrosion products develop the differences will increase, and for this reason the bureau feels that it should not make comparisons of materials until the trend of the test has developed more positively.

"Using the soil corrosion data as a starting point, the research associate supplied by the Cast Iron Pipe Research Association is now co-operating with the Department of Agriculture in making a map of the United States which will show roughly the distribution of the corrosive soils. As but a third of the country has been surveyed with respect to soils, and as less than 50 of more than 400 recognized soil series have been studied with respect to corrosion, the map now in progress must be far from complete.

"For a long time, therefore, it will be necessary to determine directly the corrosiveness of much of the soil through which a line is to pass.

"During the last few years there have been developed at the Bureau of Standards and in the laboratories of oil and gas companies several methods of determining soil corrosivity and of making soil surveys. A number of these methods, such as those described by Putnam, Corfield, Legg and Shepard, involve soil resistivity as one of the soil properties to be directly or indirectly measured. Since soil conductivity is electrolytic the determinations of soluble salts in soils or soil solutions also has a correlation with soil resistivity. Whether electrical conductivity bears a fundamental relation to corrosivity or not there can be no doubt that the two are closely associated in soils high in soluble salts and that for such soils any method in which electrical resistivity is a major factor will serve to roughly indicate soil corrosivity. The choice between the methods will, therefore, be governed largely by the ease of application to the job at hand and by the importance from the point of view of predicting corrosivity of the factors by which the several methods differ. The Bureau of Standards soil corrosion data have been of assistance in comparing methods of determining soil corrosivity, since they furnish data with which to check the results of the methods under investigation."



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AXELSON PUMPS AND SUCKER RODS

Technical Questions Answered

BY CHARLES K. FRANCIS, PH.D., TECHNICAL EDITOR

This department of The Oil and Gas Journal is devoted to the manufacturing branches of the oil industry.

Those connected with the refining of crude petroleum, the manufacture of natural gasoline and closely allied industries are invited to submit their problems to Dr. C. K. Francis, technical editor. The department was created for the purpose of aiding managers, superintendents, engineers, chemists and all those engaged in the various phases of plant operation; also those connected with the marketing and utilization of petroleum products.

Questions should be submitted in as much detail as possible so as to assure a satisfactory answer.

All inquiries should be signed and if other than the given initials are to be used please indicate the desired letters.

Questions involving patented processes, intricate formulas and calculations and estimates of costs, for obvious reasons, cannot be answered. The replies will appear on this page within a reasonable time.

ANILINE NUMBER TEST

This request is for information concerning the aniline number test, its application and significance?—E. C. H.

Aniline number is a means for indicating the knock rating of gasoline or other motor fuels. Several ways for expressing knock ratings in terms of aniline have been proposed. One of these was mentioned on this page in The Oil and Gas Journal, April 9, 1931, together with the explanation that the unknown fuel was tested in a test engine by comparison with a known quantity of aniline mixed in gasoline. Identical performance under the test conditions enables one to evaluate the unknown sample in terms of a percentage of aniline. If the fuel behaved like a gasoline containing 3 per cent aniline, that is, knocked to the same extent, it may be said to have a knock rating equivalent to an aniline number of three.

Another form is that mentioned by Lovell, Campbell and Boyd in Ind. Eng. Chem., 23, 26, 1931, as quoted. Comparisons were made in an engine. The relative knocking tendencies have been evaluated in terms of aniline, a knock suppressor, and the unit has been called the aniline equivalent. A positive aniline equivalent indicates that the compound knocks less than the reference gasoline and represents the amount of aniline, expressed as the number of centigram-mols (or gram-mols multiplied by 100) per liter, which must be added to the reference fuel to produce a fuel that is equivalent in tendency to knock to a 1-molar solution of the compound in the reference gasoline—that is, to a solution containing 1 gram-mol of the compound made up to a volume of 1,000 cc. with the reference gasoline. A negative aniline equivalent indicates that the compound knocks more than the reference gasoline and represents the quantity of aniline which must be added to the sample to make it equal the reference fuel.

"For example, the aniline equivalent of 2, 2, 4-trimethyl pentane (mol. wt. 114) is 16. This means that 114 grams of the compound made up to a liter with gasoline (about a 17 per cent solution of the hydrocarbon by volume) are equivalent in knock to a liter solution of aniline (mol. wt. 93) in gasoline containing 16/100×93 grams of aniline (about 1.5 per cent solution by volume).

"The aniline equivalent of benzene is +10 and that of the standard gasoline containing 3 cc. of lead tetraethyl per gallon is about +10, when the latter determination is made by considering the lead-containing gasoline as octane with a molecular weight of 114 and adding it to the reference gasoline as though it were octane. Although pure benzene by itself is of much higher antiknock quality than gasoline containing 3 cc. of lead tetraethyl per gallon, it is not, when in dilute solution, effective to such a large degree. Although these relationships may give an approximate idea of the magnitude of the scale used, they do not permit of direct translation of the values into terms of other scales, especially into those based upon other engine conditions or in which benzene is used in high concentrations."

KETTLEMAN HILLS AND SANTA FE SPRINGS CRUDE OILS

Could you furnish analysis of the "gasoline oil" from Kettleman Hills Field, California? How does this compare with the crude from Santa Fe Springs?—A. C. M.

The light oil from Kettleman Hills, produced around 7,000 feet, is one of the exceptionally light petroleums of the United States, having a gravity 60/62 A. P.I., and yields, upon distillation, 86/90 per cent of 62/63 A.P.I. gasoline. See this page, issue of April 16, 1931.

KETTLEMAN HILLS CRUDE OIL

Properties of the Crude Oil

Depth produced	6,990 feet
Gravity	60 ° A.P.I.
Sulphur	Under 0.10%
Vis. @ 100° F.	Under 32 sec.
Pour	Below 5° F.
Color	Lighter than No. 1 N.P.A.

YIELD

Product—	Per cent
Gasoline	90.4
Gravity 62.6 A.P.I.	
Kerosene	6.1
Gravity 41.7 A.P.I.	
Gas oil	1.9
Gravity 38.4 A.P.I.	
Residue	1.2
Gravity 32.1 A.P.I.	

Note—This oil yields 39.2 per cent gasoline having a gravity of 75.7 A.P.I.

The crude oil produced at Santa Fe Springs, California, at 8,000 feet, is much heavier than that from Kettleman Hills; the gravity is 34.2 A.P.I. and yields 31.4 per cent 52.7 A.P.I. gasoline.

SANTA FE SPRINGS CRUDE OIL

Properties of the Crude Oil

Depth produced	8,000 feet
Gravity	34.2 A.P.I.
Sulphur	0.20%
Vis. @ 100° F.	40 sec.
Pour	15
Color	Brownish black

YIELD

Product—	Per cent
Gasoline	31.4
Gravity 52.7	
Kerosene	7.1
Gravity 40.4	
Gas oil	21.6
Gravity 34.2	
Nonvis. lub. oil	6.2
Gravity 26.1/24.5	
Vis. 100/200	
Viscous lub	1.4
Gravity 24.5/24.2	
Residue	21.1
Gravity 15.4	

Note—This oil yields 5.9 per cent gasoline of 65.6 A.P.I. gravity. The analysis shows a total yield of 18.5 per cent lubricating oils.

The analyses quoted above are from Bureau of Mines R.I. 3,074 by A. J. Kramer. See also previous reports on California oils—R.I. 2,595; R.I. 2,608; R.I. 2,846.

LIQUEFIED GAS FOR WELDING

How is it possible to use liquefied gas or methane instead of calcium carbide (acetylene) for welding purposes, as calcium carbide is very expensive here?—A. G.

Natural gas, or more especially certain of the hydrocarbons of natural gas, may be used for cutting and to some extent for welding. Experiments have been made with the gas compressed to between 100 and 150 pounds pressure. The objection usually mentioned is that the heating values of natural gas and the lower members of the natural gas hydrocarbons are low and require large quantities of oxygen when compared with acetylene.

The heating value of acetylene is equivalent to 1,475 B.t.u. per cubic foot; natural gas usually close to 1,000 B.t.u.; ethane, 1,764; propane, 2,519, and butane, 3,274. The heat to be obtained from natural gas then depends upon the composition of the gas, the lowest value being for gas which is essentially pure methane, with a heating value of 1,003 B.t.u. per foot. When it is possible to select the upper hydrocarbons of the gas range, and thus concentrate it, the heating value is raised. This is the basis of the liquefied gas industry.

The large volume of oxygen required when heating with liquid gas, such as propane and butane, makes the use of these gases expensive. Propane requires twice as much oxygen as acetylene and butane 2.6 times as much. This relation may be illustrated by the equations:

$$C_2H_2 + 5O \longrightarrow 2CO_2 + H_2O$$

$$C_3H_8 + 10O \longrightarrow 3CO_2 + 4H_2O$$

$$C_4H_{10} + 13O \longrightarrow 4CO_2 + 5H_2O$$

The higher heating value of acetylene would enable one to cut a given piece of metal much faster with the oxy-acetylene flame than with natural gas. Propane and butane are both used for cutting but in order to properly handle the oxygen required, it is advisable to use a torch especially modified for this work. Butane and propane have the advantage in that they may be transported without the danger of spontaneous explosion.

It appears that in this particular problem it is necessary to consider the cost of oxygen in addition to the local price for calcium carbide required to make the acetylene.

ROAD MATERIAL DEFINED

The exact meaning of asphalt, bitumen, pitch and tar, as used in the specifications for road materials, is not always clear. Can you give a good definition covering these or refer me to some standard reference where they are defined?—N. D. R.

Probably the most reliable explanation of the carbon compounds used for road materials is that of the international committee for standardization of nomenclature and tests of road material which was in session at Paris last June. The definitions as listed below were adopted:

Asphalt—The committee accepted two definitions: International committee, "Natural or mechanical mixtures in which the asphaltic bitumen is associated with inert mineral matter." United States, "Black to dark brown solid or semisolid materials which gradually liquefy when heated, in which the predominating constituents are bitumens, all of which occur in the solid or semisolid form in nature, or are obtained by refining petroleums, or which are combinations of the bitumens mentioned with each other, or with petroleums or derivatives thereof."

Bitumen—The bitumens are defined as "mixtures of hydrocarbons of natural or pyrogenous origin or combinations of both which can be gaseous, liquid, semisolid or solid, and which are completely soluble in carbon disulphide."

Flux—The fluxes are bituminous materials, generally liquid, in which the predominating constituent is bitumen, used in conjunction with asphalts for softening the asphalt.

Pitch—"Black or dark brown, solid or semisolid fusible and cementitious residue, remaining after partial evaporation or fractional distillation of tar or tar products."

Tar—The international committee's definition has been modified to an important degree so as to conform to the British proposals for: Inclusion of the word bituminous; exclusion of the crude aqueous distillate; and possibly inclusion of gas oil tar.

The adopted definition being: "A bituminous product, viscous or liquid, resulting from the destructive distillation of carbonaceous materials." The word tar must always be preceded by the name of the material from which it is produced: Coal, shale, peat, vegetable, etc. The method of production should be indicated.

ENRICHING MANUFACTURED GAS

It is intended to extend the gas plant of our city and the network, so as to supply more than twice as much gas. I have suggested the installation of a vapor phase cracking plant, the B.t.u. content per cubic foot of the gas obtained i such a plant being three times as high as that of the city gas. The network can remain the same and the modification of all the existing burners is not contemplated. But is it possible to use gas with 1,500 B.t.u. and with a high gasoline content?—A. G.

The enrichment or reforming of manufactured gas is practiced in many towns and cities, the common base being a final product having a heating value between 500 and 600 B.t.u. The enriching gases often used are natural gas and refinery gas, the natural gas having a heating value of 1,000 B.t.u. and the refinery gas between 1,500 and 1,700 B.t.u.

The yield of refinery gas on the basis of the oil charged may range from 50 cubic feet per barrel in a topping plant to something like 350 cubic feet per barrel from a cracking unit. The gasoline content of refinery gas may run from 2 gallons to approximately 12 gallons per 1,000 cubic feet. This gasoline would have to be removed from the gas in order to avoid complications at the burners and to prevent condensation in the lines, which would cause fluctuations in the gas supply when there was a sufficient drop in the atmospheric temperature.

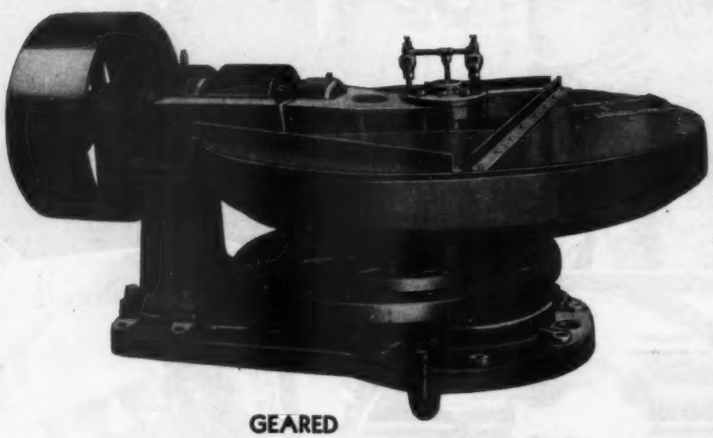
If a city were supplied with a 1,500 B.t.u. gas in place of a 500 B.t.u. gas it would be necessary to make adjustments of the burners if the maximum efficiency is to be obtained.

It does not appear that it would be an economical arrangement to build a cracking unit simply to supply gas. It would mean that the city would be forced into the refining business because of the necessity of purifying the gas and removing the gasoline; also, there would be the accumulation of the products of distillation. Such use of refinery gas is in cities that are located close to refineries having an excess of residue gas, from which the gasoline has been extracted together with the objectionable sulphur compounds commonly present in untreated refinery gas.

Caught Here and There By The Journal's Cameras

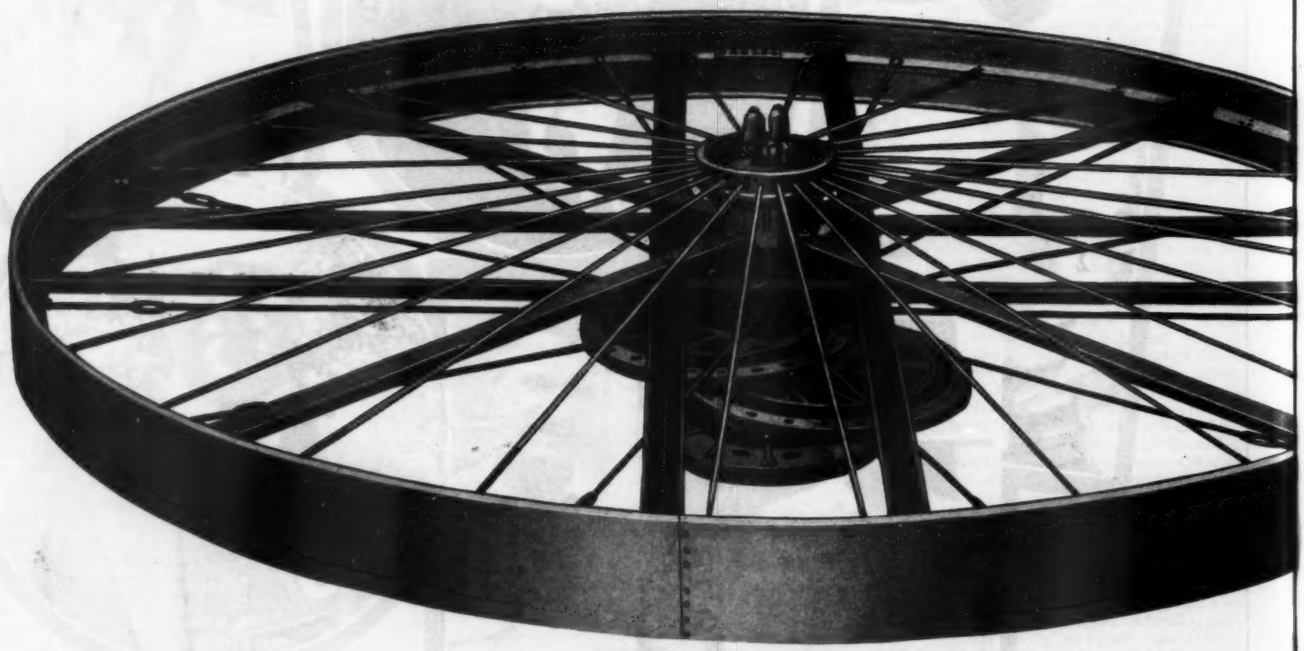
1—G. C. Murray, welder; I. A. Parker, welder helper; Robert Pyle, pipe fitter; S. M. Andrews, pipe machine operator; Ted Wheeler, construction foreman; J. W. Logan, blacksmith; and Paul Jones, warehouseman, Sinclair Oil & Gas Company, Oklahoma City, Okla. 2—J. Gray, Pilot Oil Company, Longview, Tex. 3—J. B. Humphrey, representative, Fort Worth Well & Machinery Company, Fort Worth, Tex. 4—W. C. Swift, American Brass Company, Kenosha, Wis. 5—F. O. Marler and F. E. Griffith, Gulf Pipe Line Company, Fort Worth, Tex. 6—Cyrus K. Rickel, Big Three Welding Company, Fort Worth, Tex.

NATI
PUMPING



GEARED

PUSH-PULL



BAND WHEEL

THE NATIONAL SU

Personal Paragraphs About Oil Men

P. W. Fenton, purchasing agent of the Tide Water Companies, was in East Texas last week.

* * *

Jean Vasilesco has been appointed director-general of the Rumanian State Pipelines Department.

* * *

G. H. Coxon, chief of the refining department of the Anglo-Persian Oil Company, is visiting the United States.

* * *

J. B. Graham, superintendent of field work, the National Tube Company, Pittsburgh, Pa., is on a trip through the Southwest.

* * *

Mr. and Mrs. A. E. Haley and son, of Miri, Sarawak, are returning via England to Detroit, where they will visit Mr. Haley's father.

* * *

F. D. Grunder, manager of sales of the tubular goods department, Jones & Laughlin Steel Corporation, Pittsburgh, Pa., was a Tulsa visitor last week.

* * *

S. P. Coblentz, formerly president of the Motor Fuel Products Company, Laredo, Tex., but lately of New York City, spent several days in Houston, Tex., on business.

* * *

George Bryson arrived in Petrolia, Ontario, recently from Miri, Sarawak, where he has been working on a drilling contract for the Sarawak Oil Fields, Ltd., for several years.

* * *

Raymond Russell, formerly chief engineer, Continental Oil Company, Ponca City, Okla., is now located in Tulsa as sales engineer for the E. B. Badger & Sons Company.

* * *

J. L. Shakeley, vice president and general manager of the Frick-Reid Supply Corporation, Midwest division, has returned from a business trip to St. Louis and Chicago.

* * *

Clarence Schock, Mount Joy, Pa., president of the Schock Independent Oil Company, has been spending several days in Houston, Tex., and other centers on the Gulf Coast, on business.

* * *

J. C. MacQuiddy, marine superintendent of the Standard Oil Company of California, with offices at San Pedro, Calif., was recently elected to the board of directors of the Bilge Club.

* * *

Victor J. Freeman, of Vancouver, British Columbia, has resigned the position of field manager of International Pipe Lines, Ltd., to engage in oil operations in the Cariboo district of British Columbia.

* * *

Dr. Chun Young Chan, of the Chinese Bureau of Mines, is touring the oil fields and refineries of the United States to study modern methods with a view to establishing a modern refining industry in his country.

* * *

Ralph G. Bowman, assistant sales manager of the General Petroleum Corporation of California, left Los Angeles for New York to attend a conference of the marketing division of the Standard Oil Company of New York and its subsidiaries, of which the General Petroleum Corporation is one.

* * *

Ned W. Beaudreau, with the Texas Electric Service Company, Big Spring, Tex., was married to Miss Thelma Jackson, of that city, in Tulsa on June 6, and after a short honeymoon trip through the Ozarks they will be at home to friends at 1500 Nolen Street, Big Spring, after June 15.

* * *

J. M. Nisbet, chief geologist of the Empire Companies, has been elected district representative of the East Oklahoma district of the American Association of Petroleum Geologists to complete the term of Frank R. Clark, second vice president of the association, who resigned as district representative.

Fred W. Robertson, purchasing agent of the Skelly Oil Company, is ill of flu at his home.

* * *

P. S. Graver, of the Graver Tank & Manufacturing Company, Chicago, Ill., visited Tulsa recently.

* * *

John Mackenzie, who has been in the Sarawak oil fields for some time, is visiting in Vancouver, British Columbia.

* * *

Roy Lundy, of the Tulsa Rig & Reel Company, has been spending considerable time recently in the bustling East Texas fields.

* * *

Harry C. Hanszen, Houston, Tex., independent oil man, accompanied by Mrs. Hanszen, have returned from Gulfport, Miss., where they visited several days.

Men of the Industry

E. E. Plumly

E. E. Plumly, vice president of the Magnolia Petroleum Company, in charge of refineries, was born in Washington County, Ohio, December 31, 1871. He attended rural schools and at the age of 17 entered Marietta College, but he left that institution two years later to return home and operate the farm. In 1896 he entered the employ of the Standard Oil Company of New York at the Olean, N. Y., refinery as a day laborer, and soon he was promoted to gang foreman. In 1897 he married Miss Blanch Curtis, his boyhood sweetheart, and three sons were born.

The next year Mr. Plumly became a stillman for J. S. Cullinan & Company in Corsicana, Tex. In 1903 he was made refinery superintendent, serving in that capacity through the regimes of the Cullinan interests, the Corsicana Refining Company, the Navarro Refining Company and John Sealy & Company. He became associated with the Magnolia company when John Sealy & Company organized a joint stock company, with home offices in Corsicana. John Sealy & Company previously had acquired the Burt Refining Company's plant in Beaumont, Tex., and the Corsicana Refining Company's plant in Corsicana. In 1912 he was made general manager of refineries by the Magnolia Petroleum Company and since then he has resided in Beaumont.

In 1913 Mr. Plumly was elected a director of the company and in 1929 he was made a vice president. He is active in church and civic work and he is a Mason and Shriner.

E. F. Seaman, of the St. Louis office of the Bethlehem Steel Company, was in Tulsa last week.

* * *

Walter Gray, sales manager of Dewey Portland Cement Company, Kansas City, Mo., was in Tulsa last week.

* * *

Emil Opferkuk, Superior Gas Engine Company, Springfield, Ohio, returned home via Tulsa from a visit to the Texas oil fields.

* * *

A. F. Campbell, representative of the Michigan Valve Company, has returned to Tulsa from a trip West on which he spent about 30 days.

* * *

Hector Mackenzie, who has been working in the oil field at Miri, Sarawak, is visiting his father, W. L. Mackenzie, of Stockport, England.

* * *

A. A. Holland, formerly general manager of the Lago Oil & Transport Corporation, has been elected president of the General Natural Gas Corporation.

* * *

Jonkheer de Youge, former general manager of the Royal Dutch Petroleum Company, has been named governor-general of the Dutch East Indies.

* * *

Mr. and Mrs. J. L. Stauft (nee Flora McDonald), and son, Peter, of Talara, Peru, are spending four months' furlough with Mrs. Stauft's parents in Petrolia, Ontario.

* * *

Lewis B. I. Hamilton, chief geologist for the Magdalena Syndicate, has arrived in Germany to take charge of the development of the company's German oil properties.

* * *

Earle E. Baer has been appointed southwestern and Gulf Coast sales engineer for the Weber Engine Company of Kansas City, Mo., and is making his headquarters in Houston, Tex.

* * *

Tilden E. Guillory, refinery engineer, who temporarily has been associated with his brother in the Gupeco Refining Company, Alexandria, La., has returned to his home at Houston, Tex.

* * *

A. C. Rauschaupt, of Fresno, Calif., has been re-elected vice president of the Felix Oil Company, which concern owns a very valuable piece of property in the Kettleman Hills Field of California.

* * *

W. S. Morris, petroleum engineer with the Indian Territory Illuminating Oil Company, has been transferred to the Oklahoma City district office from the company's headquarters at Bartlesville, Okla.

* * *

A. R. Ogston, head of the technical department of the Cities Service organization in Great Britain, is on a several months' visit to the United States, studying the manufacturing methods and new developments in processes and products of the parent company.

* * *

Harold Adkison, graduate of the University of Oklahoma, has succeeded Edward Anderson as field representative for the American Society of Mechanical Engineers in the Tulsa office. Mr. Anderson is a member of the faculty of the University of Tulsa and devoting full time to his duties there, and Mr. Adkison has been selected to take over the affairs of the A.S.M.E. and maintains offices in the Tulsa Building, Tulsa.

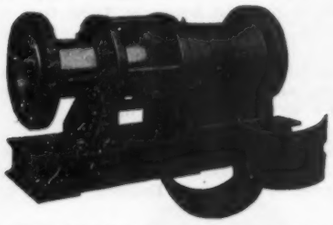
* * *

R. C. Holmes, president of The Texas Corporation; W. L. Mellon, chairman of the board of Gulf Oil Corporation; E. B. Reeser, president of American Petroleum Institute; and W. C. Teagle, president of Standard Oil of New Jersey, are on the co-operating committee for the petroleum industry for the eighth annual conference of major industries which will be held October 21, under the auspices of Columbia University and the Institution of Meat Packers.

Oil Industry Equipment and Supplies

EXPANSION JOINT MADE FOR SEVERE CONDITIONS

The salient feature of the "Murfco" joint, made by the Murphy Machine Co., Philadelphia, Pa., lies in the fact that it has a permanently fixed extension guide which is rigidly attached to the



body of the joint proper. This precludes misalignment and preserves the packing in its concentric position with the sleeve proper, eliminating leakage and making repacking of the joint simple.

Another feature is found in the lubricating system. Alemite fittings lead a charge of zinc oxide lubricating compound under pressure through a metal distributing ring, forming the lubricant into a thin film between the packing and the sliding sleeve. Hence the packing is impregnated and preserved in a soft pliable and resilient condition, functioning at maximum efficiency instead of becoming hardened and losing its packing qualities.

Other features have been provided to eliminate expansion line trouble under the severe conditions found in present-day high-pressure and high-temperature pipe line service.

"STATIONETTE" PERMITS SERVICE IN TINY SPACE

A demand has sprung up for the superservice stationette developed by the Butler Manufacturing Co., Kansas City, Mo., and Minneapolis, Minn. The stationette is a complete air, water, oil and gasoline dispensing outfit occupying only 2½'x18' of ground space. In this small area are compactly arranged two visible or two meter pumps, six 30-gallon lub oil tanks with quart stroke pumps, air compressor with hose and a water hose line ready to connect to water line. The stationette is designed for installation on a concrete island. Underground tanks are beneath this with fill pipe and pump connection extending up through the concrete. A structural steel frame encloses the lub tanks and air compressor and supports the canopy roof of the hip type. Either the ribbed panel steel or steel tile roof is furnished. The compartment containing the air compressor is paneled with steel top and sides. Between the four steel columns carrying the roof is fitted a steel hood counterbalanced with weights within steel tubes. At night the hood is lowered to enclose the lub pumps and counter formed by the panel over the compressor compartment, where it is securely locked.

Hose may also be enclosed under the lowered hood. All conduit and knockout boxes for light wiring are built in with the steel structure supporting the roof. Vent pipes from underground tanks extend up through the roof. Roof ridge carries panel steel sign.

A somewhat larger superservice stationette is being produced by the Butler company with the compressor compartment utilized as quarters for an attendant.

C. E. Naylor, Houston, Tex., manufacturers' agent, specializing in refinery and railroad supplies, has moved his offices from the Esperson Building to offices of the Maintenance Engineering Corp., 1400 Conti Street.

NOTES ABOUT TRADE LITERATURE

A four-page bulletin issued by the Spencer Trailer Co., Augusta, Kans., announces the new Spencer Tandem-axle trailer for extra-heavy duty.

The William Powell Co., Cincinnati, Ohio, has published a booklet of 20 pages describing and illustrating Powell corrosion-resistant valves.

A bulletin describing Neilan differential and pressure limit controllers has been issued by the Neilan Co., Ltd., 641 Santa Fe Avenue, Los Angeles, Calif.

A mailing piece which the Butler Manufacturing Co., Kansas City, Mo., and Minneapolis, Minn., is sending out describes and illustrates Butler truck tanks.

"Atmospheric Distillation Units in Europe" is one of the illustrated articles in the current number of Heat Engineering, published by the Foster Wheeler Corp., New York.

The Hayton pump and blower division of International-Stacey Corp., Connersville, Ind., has issued a new bulletin on centrifugal pumps, featuring the open impeller type multistage pump.

The Coppus Engineering Corp., Worcester, Mass., is mailing its bulletin 160-3, which is devoted to "Coppus heat-killers," devices for accomplishing industrial ventilation.

An eight-page circular on Trackson crawler wheels describes the advantages of this equipment for heavy hauling operations. It is printed in two colors and is illustrated with action photographs of the wheels. It may be obtained from the Trackson Co., 1320 South First Street, Milwaukee, Wis.

Byron Jackson type S pumps are the subject of a 34-page illustrated bulletin being distributed by the Byron Jackson Co., Los Angeles, Calif.

Wallace bending machines are described and pictured in a 32-page booklet issued by the Wallace Supplies Manufacturing Co., Chicago.

William Hiergsell & Sons, 295 Pearl Street, New York, are sending out a bulletin dealing with the Herco Streamline Silvertip hydrometer with metal ballast.

"Screening Drilling Mud" is among interesting articles in the current number of Drilling Mud, the new publication of the Baroid Sales Co., Los Angeles, Calif.

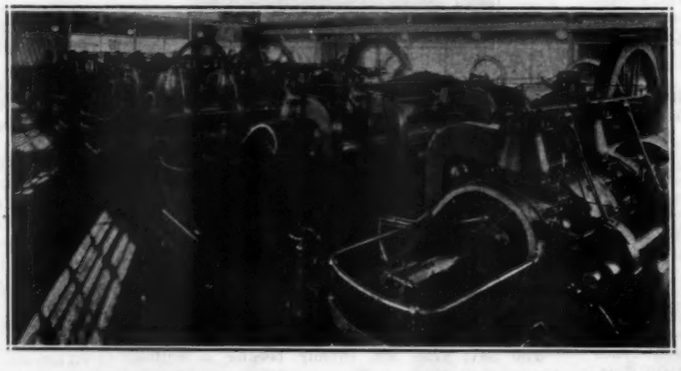
Articles of special interest to the oil industry are contained in the Southwest number of The Vent, published by the Gilbert & Barker Manufacturing Co., Springfield, Mass.

The International Harvester Co., Chicago, is sending out a broadside describing its new 1½-ton truck Model A-2 and specifications of both the Model A-2 and the Model B-2 (Six-speed Special).

The Shaffer Tool Works, Brea, Calif., has issued literature on its newest fishing tools. Fluid trip rotary jar booklets and inside casing cutter folders are ready for distribution.

A new price list sent out by the Roessler & Hasslacher Chemical Co., Niagara Falls, N. Y., is in the form of a 32-page booklet, replacing the folder formerly issued. It will be published quarterly hereafter.

TWO COMPRESSOR STATIONS ON GAS LINE COMPLETED



Along the great 1,350-mile natural gas pipe line from the Texas Panhandle and heading for Indianapolis, two main compressor stations have been completed. One is the Kismet station of the Panhandle Eastern Pipe Line Co. at Liberal, in southwestern Kansas. The other is the Louisburg, Kans., station of the same company. At the latter point a dam to impound 40,000,000 gallons of water for cooling purposes has been constructed. Large cooling towers have been erected at each plant.

The compressor station at Liberal an interior view of which is shown here as example of the modern trend in power engineering. Four twin-tandem double-acting gas engine compressor units beat ceaselessly in unison, keeping the line alive. And although the units are 1,000 brake horsepower each, the toll they take for fuel is an infinitesimal part of the total volume of gas pushed through.

In the plant next door are gas engines of a different size and design, but engineered to the same standards as the main units. Here two compact 14¾"x16" verticals keep generators spinning—creating light and auxiliary power so necessary to successful operation of the compressor station. Each engine has three cylinders, and is rated 190 brake horsepower.

Particular care has been taken to see that the main plant and the auxiliary plant are equals in efficiency. All the engines are the four-cycle type, and all are the same make, Cooper-Bessemer. The same principle was followed at the Louisburg station.

MEN KNOWN *in* THE EQUIPMENT FIELD

The Truscon Steel Co. of Youngstown, Ohio, has announced the appointment of Garret A. Connors as vice president and director of purchases. Mr. Connor has had 24 years' service as an executive in

Garret A. Connors

the production division of Truscon. He has gained an authoritative position in the steel industry and has attracted a wide circle of friends. In his new capacity, Mr. Connors will have complete charge of purchases for all Truscon plants, maintaining his headquarters in Youngstown.

STEEL CONTAINER GETS SERIES OF HARD TESTS

A giant steel ball was blown to pieces in a test conducted at the A. O. Smith Corp. plant on May 15, before government officials, representatives of regulatory bodies and navy officers. It was the culmination of a lengthy test program, designed to demonstrate the quality and to furnish data on this new type of high-pressure container for transporting and storing helium gas used by the United States Navy.

The spherical vessel was one of a group now under construction for the Navy and was 7 feet 10 inches in diameter, made of heavy alloy steel plates and welded together by the Smith patented process. After passing the regular acceptance test, it was mounted on a turntable and, while under a pressure of 2,360 pounds per square inch, it was hammered with powerful air hammers for 72 consecutive hours. Over 30,000,000 blows were struck. Following this terrific punishment the sphere was placed on a steel foundation and, while under 2,620 pounds pressure (64 per cent of the yield point), a heavy weight was dropped on it from a height of 23½ feet. The "skull cracker" weighed close to 1 ton, thus delivering a blow of upwards of 11,000,000 foot/pounds per second. This test was made first on the pole and then on the weld, in each case making a dent about 13 inches in diameter and three-sixteenths inch deep.

The final test was to raise the pressure until failure occurred. Heavy steel guards were placed around the ball and ingenius instruments connected, which would record the behavior of the vessel as it approached destruction. The vessel failed at a pressure of 5,700 pounds per square inch.

The Westinghouse Electric & Manufacturing Co., East Pittsburgh, Pa., announces publication of Leaflet 20,385-A, Type CS squirrel cage induction motors, describing the new W-frame motor, which has interchangeable mechanical and electrical parts.

O. C. S. Timken-equipped Rig Front on a heavy pumping job at Tonkawa, Oklahoma. This well is 4,200 feet deep.

O. C. S. Rig Fronts make light work of heavy pumping. They are equipped with Timken Bearings at the vital points of friction and hard service . . . 12 Timkens are used, assuring the operating and maintenance economies, dependability and long life associated with Timken tapered construction and Timken-made steel in all types of oil field machinery.

THE TIMKEN ROLLER BEARING COMPANY, CANTON, OHIO

TIMKEN *Tapered Roller* **BEARINGS**

Natural Gas Industry Developments

NATURAL GAS IS NOW FOURTH IN UTILITIES

Development of the natural gas industry has progressed so rapidly during the last four years that at the end of 1930 it had attracted investments totaling more than $2,500,000,000, and taken with the manufactured gas industry, has outgrown the telephone and telegraph business, according to Ford, Bacon & Davis, engineers. The two branches of the gas utility business now rank fourth in the public utility field with steam railroads first, electric power and light units second and electric railways third.

In 1926 the industry developed rapidly with the discovery that by employing certain pipe line construction methods and using a new type of pipe, the gas could be transported long distances to the rich markets at middle western and eastern cities. With these developments natural gas sales increased, the 1930 volume being approximately 1,850,000,000,000 feet and the estimated sales for 1931 being placed at more than 2,000,000,000,000 feet.

The longest line in point of total mileage is the Southern Natural Gas Co.'s system, which extends from the Monroe-Richland Field in Louisiana to Atlanta, Ga. The system includes 429 miles of main trunk line, 67 miles of feeder lines and 829 miles of branch lines. A total of 19 river crossings were necessary in piping the fuel across Mississippi, Alabama and parts of Louisiana and Georgia, the crossing of the Mississippi River alone involving six lines of 10¾-inch pipe and two lines of 16-inch pipe. Two compressor stations and 450 miles of telephone line complete the equipment of the main line, which has a capacity of 100,000,000 feet daily and a potential capacity of 150,000,000 feet when additional stations are constructed.

OKLAHOMA GAS LINE

Plans have been completed by the Winchester Oil & Gas Co. for construction of a 4-inch natural gas pipe line to supply Carmen, Dacoma and Aline, Okla., where the company holds franchises. The line will be laid from a connection with the main trunk line from the Medicine Lodge, Kansas, Pool, north of Alva, Okla.

Citizens of Red Oak have granted a natural gas franchise to the Spiro Gas Co., a subsidiary of the LeFlore County Gas & Electric Co., of Poteau, Okla. The company will construct 3 miles of gas pipe line from the Yancey well to supply the Red Oak gas distribution system, which according to terms of the franchise, is to be ready for service within 60 days. The supply is owned by the LeFlore County Gas & Electric Co.

MEMPHIS NATURAL GAS SALES

Sales of 9,613,446,500 feet of natural gas for the 12-month period ended April 30, 1931, compared to 8,177,388,800 feet for the previous 12-month period, a gain of 18.43 per cent, are reported by Memphis Natural Gas Co., affiliate of Appalachian Gas Corp.

GRIMES COUNTY TEST

BRYAN, Tex., June 6.—Another effort is to be made to find oil at Carlos, Grimes County, by the Raiajo Petroleum Co. of Dallas. The new location is 300 feet west of the old test which blew in as a gasser five years ago. The well blew for three days until the steel hook holding the drill stem was cut by flying sand and gravel and 2,500 feet of drill stem dropped into the hole, which caused it to sand up and stop blowing. It could never be salvaged. The present effort will be to secure gas and the test will be drilled 3,500 feet, if necessary.

FETTKE ANALYZES CUTTINGS FROM WELLS IN TIOGA, PA., GAS FIELD

PITTSBURGH, Pa., June 6.—Subsurface studies of the new gas field in Tioga County are being carried on by Charles R. Fettke, professor of geology, Carnegie Institute, who reports as follows:

In connection with geological survey of the Tioga region, which the Pennsylvania Geological Survey has under way at the present time, the writer has been engaged to examine and study in the laboratory samples of such well cuttings as may become available during the progress of the work with the object of identifying and correlating the formations penetrated by the drill. The Lycoming Natural Gas Corp. and the Allegany Gas Co. have already submitted several complete sets of cuttings from top to bottom of wells drilled in this region. These are being studied at the present time. Several other operators have furnished partial sets of such cuttings. The success of this work will depend to a considerable degree upon the extent to which the operators will co-operate in collecting the necessary samples. It is hoped that samples from wells located over as wide an area as exploratory drilling operations are eventually extended will be made available for examination.

The Source Rock

The successful wells to date in the Tioga Field have encountered the gas in the upper part of the Oriskany sandstone. In the case of the No. 1 Palmer, the No. 1 Farr and the No. 1 Close, small fragments of the sand were blown out of the hole at the time the wells were drilled in. These consist of tightly cemented comparatively pure, medium-grained quartz sandstone in which secondary silica is the chief cementing agent. Porosity determinations on four such fragments from the No. 1 Palmer showed total pore spaces of 7.4, 7.4, 7.7 and 8.5 per cent by volume respectively; four from the No. 1 Farr, 4.0, 4.1, 4.9 and 5.0 per cent respectively; and one from the No. 1 Close, 10.4 per cent.

Variation in Porosity

It hardly seems possible that a sand of as low porosity as that of the fragments tested could yield such large volumes of gas as flowed from these wells at the time they were drilled in, even at the high pressures at which the gas was encountered. One explanation naturally is that the sand varies greatly in porosity vertically as well as horizontically and that the fragments blown out of the wells represent only the tightest portions. The occurrence of small but well developed quartz crystals, showed prism faces and terminated by pyramids, on the surfaces of most of the fragments from the No. 1 Farr well, however, suggests another possibility. Crystals of the type described could hardly develop except by growing out from a wall into an open cavity. One of the fragments shows a plane surface studded with quartz crystals. In the case of the others, the surfaces are slightly curved. This occurrence seems to indicate the possibility that secondary cavities may have been developed in the sandstone by fracturing along the anticline axis or that the sandstone in places may be intersected by shear or fault zones and that the secondary openings developed in it in this manner afford the chief reservoir for the gas rather than the original pore spaces between the sand grains themselves, which if the fragments blown out by the gas are typical of the formation as a whole, have to a considerable extent been closed by the deposition of secondary silica and in some instances carbonates.

Successful Drilling Method

In order to bring in successfully wells of such large volume as those encountered to date in the Tioga Field under the pressures which prevail, it is necessary to set and cement casing above the producing horizon before the sand is drilled in. It is, therefore, necessary to be able to recognize one or more horizon markers whose distances above the sand are known, so that the proper point at which the casing should be set can be determined.

The Onondaga limestone, which immediately overlies the Oriskany, is not very well developed in the Tioga Field. In the wells from which samples have thus far been examined, only from 10 to 20 feet of true limestone are present immediately above the sand. The chert, which is so characteristic of the Onondaga on the outcrop in western New York, is absent.

Thousand-Foot Lime

Perhaps the most readily identifiable horizon above the Oriskany is a limestone 80 to 85 feet thick which is locally known as the "1,000-foot lime." In the No. 1 Palmer well, this limestone was encountered at the interval between 3,035 and 3,118 feet, the top of the Oriskany being at 4,005 feet, making the interval between the top of this limestone and the top of the Oriskany, 970 feet. In the No. 1 Howe well, the limestone occurs at the interval between 3,388 and 3,474 feet. In this well it contains a shale break 25 feet thick, 7 feet above the base. The interval between the top of this limestone and the top of the Oriskany is 987 feet. In the No. 1 Kemp well, only one screw from this horizon was sampled and hence the exact top and bottom cannot be determined from the samples saved. The sample taken from the interval between 3,052 and 3,058 feet, while the top of the Oriskany was encountered at 4,350 feet. This thickening of the interval in the Kemp well, as compared to the Palmer and the Howe, can probably not be explained satisfactorily until more wells have been drilled in their vicinity. A careful survey of the Kemp well showed that the hole was straight.

In the No. 1 Meeker well, only one sample of the "1,000-foot lime" was taken so that the exact top and bottom cannot be determined. This came from the depths between 3,235 and 3,265 feet, while the top of the Oriskany was encountered at 4,193 feet. The interval in this well, therefore, corresponds rather closely to No. 1 Howe. It will not be safe, however, to assume that this interval will remain exactly the same in wells located at any considerable distance from those mentioned. Variations of several hundred feet may be expected.

The writer has tentatively correlated the above limestone with the Tully horizon since it occurs at the base of a series of black shales 157 feet thick in the No. 1 Palmer well, the first prominent thick series of black shales penetrated, which are thought to represent the Genesee black shale.

ORDERS GAS INQUIRY

Investigation of properties and rates of the Lone Star Gas Co. and the Community Natural Gas Co. of Dallas was ordered by the Oklahoma State Corporation Commission following complaints by citizens of Walters, Marietta, Purcell, Durant, Frederick, Wynnewood and Waurika. A date for a general hearing will be announced later.

GAS HEARING JUNE 25

The Oklahoma State Corporation Commission announced it would resume hearing into rates of the Oklahoma Natural Gas Corp. June 25.

REFORMING GAS TEST FOUND SATISFACTORY

PHILADELPHIA, Pa., June 8.—Considerable interest is expressed in a paper delivered before the joint production and chemical conference of the American Gas Association by H. G. Terzian of United Engineers & Contractors, Inc., which reveals that tests have been made during the past year showing that the U.G.I. reforming process, which had been developed to permit the use of refinery oil gas by the Philadelphia Gas Works, is also applicable to natural gas.

"Experiments have been conducted on a large scale," said Mr. Terzian, "reforming natural gas without the production of lampblack. These tests were made on a water gas set, operating the set continuously over a long period in order to determine the practical value of reforming under actual operating conditions. The results from these tests were very satisfactory and were almost identical with the results obtained with the use of refinery oil gas when calculated on a therm basis."

The U.G.I. reforming process has permitted the Philadelphia Gas Works to utilize a large volume of the surplus refinery gas produced at the refinery of the Atlantic Refining Co. near Philadelphia.

Other papers delivered at this meeting showed to what extent the various gas companies are experimenting with natural gas mixing processes. It is understood that the U.G.I. process will permit the use of natural gas as an enrichment agent for coke oven gas.

FORT WORTH TO VOTE ON MUNICIPAL GAS

FORT WORTH, Tex., June 6.—Fort Worth will vote July 21 on whether it wants municipal gas ownership, the city council having voted to submit charter amendments necessary to municipal operation to the people.

The vote in July will be the second the citizenship will make on municipal gas. In February, voters by a 2 to 1 majority authorized the council to negotiate for a contract to supply gas to a municipal system.

Council has approved a tentative contract with the Shamrock Natural Gas Co. of Pittsburgh, Pa.

It provides for a gate rate of 30 cents for domestic and 16 cents for industrial gas. The company agrees to build an 18-inch loop line from the Panhandle Field.

PACIFIC GAS CONTRACT

SAN FRANCISCO, Calif., June 6.—Spreckles Sugar Co. has contracted with Pacific Gas & Electric Co. to take natural gas for its beet sugar refinery operations at Salinas, Calif. The contract calls for maximum of 16,000,000 feet daily. The refinery operates for period of about four months.

GAS FRANCHISE APPROVED

CHATHAM, Ontario, June 6.—Ratepayers of Yarmouth Township, Elgin County, Ontario, have approved the granting of a franchise to the Southern Ontario Gas Co. to distribute gas in the township. The franchise is for 10 years, with the option of extending for a like period, rates being 85 cents per 1,000 feet up to 10,000 feet each month and 60 cents over that quantity. The company is planning to pipe gas to Yarmouth Township from its new field in Mosa Township, Middlesex County, and may extend its service to Union, Sparta, Yarmouth Heights and Port Stanley.

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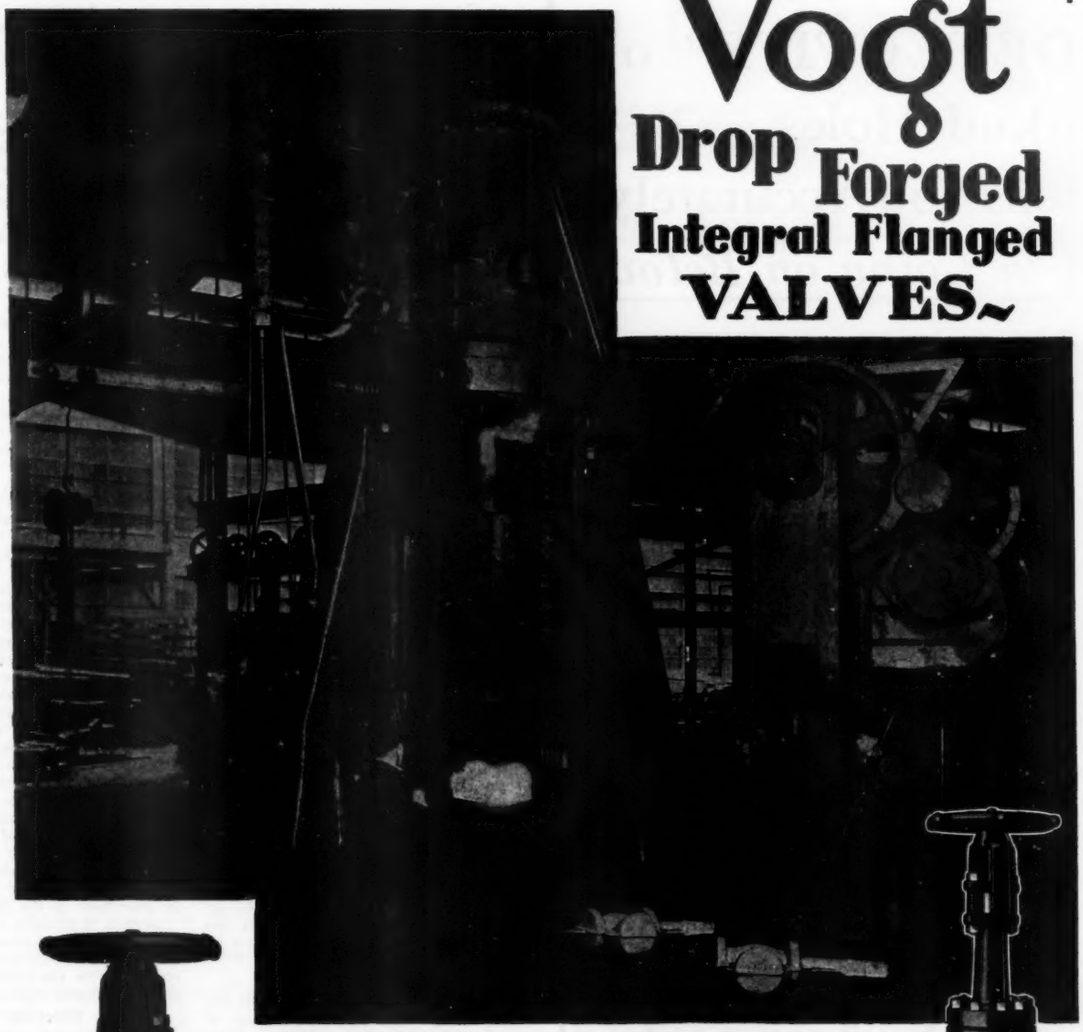

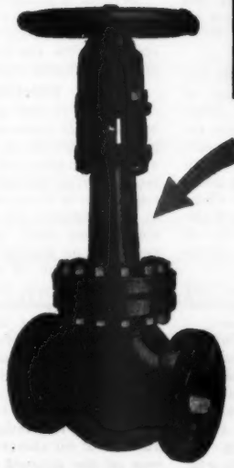

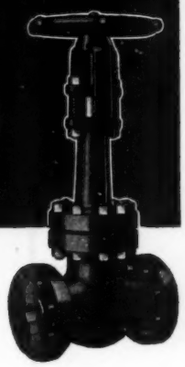

6"-600 Lbs. at 900°F.

4"-1350 Lbs. at 900°F.

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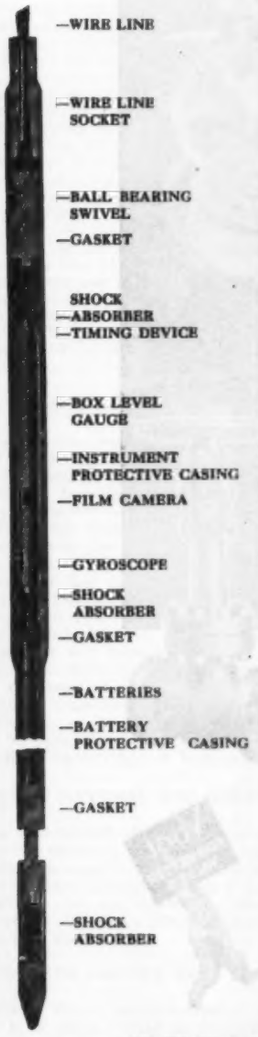

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SURWEL Clinograph

TEXAS OIL CONSERVATION MEASURE THAT MAY REACH SPECIAL SESSION

AUSTIN, Tex., June 8.—The oil conservation bill introduced at the recent session of the legislature by Representative A. M. Howsley of Albany and which is considered the model for the bill to be urged upon the special session if called, is as follows:

Be It Enacted by the Legislature of the State of Texas:

Section 1. The production of oil in this State in excess of the current reasonable market demand for current use and consumption shall constitute waste and is hereby prohibited. The Railroad Commission of Texas is hereby directed to ascertain from time to time such current reasonable market demand for current use and consumption and to promulgate and enforce rules, regulations and orders and do all things necessary to prevent such waste. Nothing contained in this Act shall be construed to relieve any common purchaser of oil from its duties and obligations imposed by Act of the Forty-first Legislature, Fifth Called Session, Chapter 36, page 171, usually known as the Common Purchaser Law.

Sec. 2. Whenever the full production of oil from any oil pool in this State is or can only be obtained under conditions resulting in waste of oil or gas or in the wasteful dissipation of the gas energy or water drive of the pool, or whenever because of lack or shortage of reasonable market demand for current use and consumption for oil from the pool or of transportation facilities for moving same to market certain producers or operators are unable to market their full production from the pool and are thereby compelled either to permit oil and gas under their land to remain unproduced or be drained from their properties by those having transportation facilities or a market or to produce and run same to storage thus resulting in waste, the Railroad Commission of Texas is hereby authorized and empowered, and it shall be its duty, taking into consideration the correlative rights of all property owners in the pool, to limit or restrict the production of oil or gas from said pool and the several leases and properties therein to such extend and in such manner as to lessen or prevent dissipation and waste; and it shall be no defense against any order, rule or regulation of the Commission made or entered for such purpose that an individual producer in violating the order, rule or regulation involved is not producing waste by the operation on its or his own leases or properties.

Waste Prohibited

Sec. 3. The unnecessary waste or dissipation of gas and/or the gas energy of an oil pool is hereby prohibited. However, it is not the intention to require repressuring of an oil pool, nor to require the owners of separate properties in an oil pool to unitize same under one management or control. The Railroad Commission of Texas is authorized to make such rules and regulations and do all things necessary to prevent such waste or dissipation.

Sec. 4. Articles 6008 of the Revised Statutes of Texas, 1925, is hereby amended so as to read hereafter as follows:

"Article 6008—Gas to be confined—Any person, copartnership, or corporation in possession, either as owner, lessee, agent or manager, of any well producing natural gas only, in order to prevent the said gas from wasting by escape shall, within five days after penetrating the gas bearing rock in any well, shut in and confine the gas in said well until the gas which is produced therefrom shall be utilized for one or more of the following purposes; light, fuel, or power; provided, that the Railroad Commission may permit the use of such gas for the purpose of being introduced into an oil bearing stratum in order to maintain or increase the rock pressure, or otherwise increase the ultimate recovery of oil from such stratum."

Appeal Extended

Sec. 5. If any party having a substantial interest in any property directly affected by any order, rule or regulation promulgated by the Railroad Commission of Texas pursuant to this Act or to Title 102 of the Revised Civil Statutes of Texas for 1925 as amended, or if any party whose conduct is regulated, affected or modified by any such order, rule or regulation, is dissatisfied with any such rule, regulation or order, such dissatisfied party may file a petition setting forth the particular cause or causes of objection thereto in a court of competent jurisdiction in Travis County against said Commission as defendant. Said action shall have precedence over all other cases on the docket of said court of a different nature and shall be tried and determined as other civil cases in said court. After perfection of service or after answer is filed, on motion of either party, the court shall set and call said case for trial on the tenth day after the filing of such motion, unless said case is then put on the jury docket, and no jury is available on such trial day, in which event the same shall be set and called for trial on the first day a jury is available after such tenth day. In all trials under this section the burden of proof shall rest upon the plaintiff. No temporary restraining order or injunction shall be granted without hearing after ten (10) days notice to said Commission; and if on final hearing in the trial court the order, rule, or regulation complained of be held valid, all such injunctions shall be vacated and dissolved. Either party to said action has the right of appeal and said appeal shall at once be returnable to the appellate court and said action so appealed shall have precedence in said appellate court over all causes of a different character therein pending. In the Court of Civil Appeals such court shall certify to the Supreme Court all questions of law necessary to a determination of said cause where such questions of law have not been determined previously by the Supreme Court and said cause, as constituted by the certificate from the Court of Civil Appeals, shall have precedence in the Supreme Court over all causes or cases of a different character in such court. The judgment of the Court of Civil Appeals entered conformably to the answer of the Supreme Court to such certified questions shall be final and no writ of error shall lie therefrom to the Supreme Court.

Section 6 Chapter 313 of Acts of the Forty-first Legislature, Regular Session, and all other laws and parts of laws in conflict with the provisions of this section are hereby repealed.

Enforcing Clause

Sec. 6. If any person, firm or corporation shall produce from any property or properties oil in excess of the amount allowable under any order, rule or regulation during the time such order, rule or regulation is being reviewed by the courts at the instance of such person, firm or corporation, then, in the event such order, rule or regulation shall be held, by final judgment, to be valid and enforceable, such person, firm or corporation or successor or successors in interest shall thereafter, in the manner prescribed by the Railroad Commission of Texas, reduce the production of oil from said property or properties below the amount which would otherwise be allowable and to the extent and for the time that the amount of the reduction will equal the amount of oil theretofore produced in excess of the amount allowed by such order, rule, or regulation held to be valid; provided that the said Commission shall issue its order fixing the amount and method of such reduction only after notice, and having due regard to the prevention of waste.

In the event any person, firm or corporation shall produce oil in excess of the amount allowed under any order, rule, or regulation during review of the validity of the order, rule, or regulation, the Railroad Commission of Texas shall file a statement to that effect in the deed records of the county in which the prop-

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Million-dollar concerns in the Oil Industry and in all leading industries . . . the country over . . . have proved the merit of Dodge Trucks for you. Million-dollar concerns with hauling work similar to your own, and with a desire—identical with your own—for low cost, dependability and able performance. Million-dollar concerns who continue year after year to increase their already large fleets of dependable Dodge Trucks. » » Your Dodge Brothers dealer will gladly show you the impressive list of nationally-known concerns who have put their faith and their dollars in Dodge Trucks. He will also gladly place a Dodge Truck at your disposal for inspection, test and comparison. You will find its price exceptionally low. You will find that balanced design and precision manufacture insure typical Dodge dependability, long life and economy.

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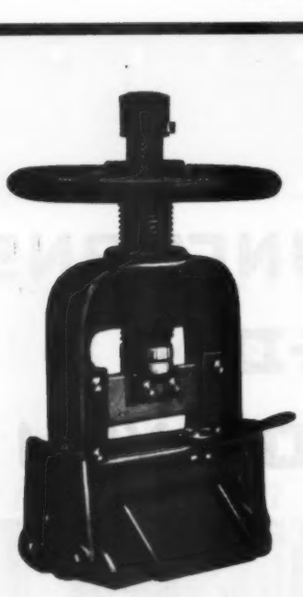

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Longyear Core Splitters are available in three sizes: hand power machines for core 7/8" to 2 1/8" in diameter, and for cores from 1 3/8" to 3 1/2", and a larger machine for 4" to 6" cores operated on the hydraulic jack principle, having a pressure capacity of 70,000 pounds, which is sufficient to split successfully core of any type formation.

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erty is located, and after filing of such notice, any person, firm or corporation purchasing said property or any part thereof or interest therein, shall take title subject to the obligation to reduce the production in accordance with the order of said Commission as provided for in the preceding paragraph.

Sec. 7. The provisions of Title 102 of the Revised Civil Statutes of Texas, 1925, as amended, relating to penalties, the making and enforcement of rules, regulations or orders, notice of hearings, procedure, remedies and reviews applicable to conservation and the prevention of waste as modified hereby shall apply in the enforcement of this Act.

Sec. 8. This Act shall be cumulative of all laws of the State of Texas relative to oil and gas and their conservation.

Sec. 9. If any of the provisions of this Act shall be held to be unconstitutional or invalid, such holding shall not have the effect of nullifying the remaining parts thereof, but the parts not so held to be unconstitutional or invalid shall still remain in full force and effect.

Emergency Clause

Sec. 10. The fact that there has been some question in the minds of certain people as to the authority of the Railroad Commission to make and enforce orders requiring the limitation of production to the market demand for its use and requiring the ratable restriction of production in pools in order to prevent waste, and the further fact that delays in the enforcement of such orders and in proceedings for the review thereof are causing serious waste of both oil and gas threaten to demoralize the whole oil industry in Texas, create an emergency and an imperative public necessity that the Constitutional Rule which requires bills to be read on three several days be suspended and the same is hereby suspended and this Act shall take effect and be in force from and after its passage; and it is so enacted.

OFFERS SLIDING SCALE PLAN FOR PRORATION

(Continued from Page 56)

is shown in Plate 6. The daily operating costs of a number of wells of varying depths and in the same district were obtained and plotted. From the resulting curve a formula was derived which probably furnishes a fair and practicable method of assigning minimum allotments to wells of this particular district. The minimum allotments are expressed as dollars per day and to reduce this figure to barrels daily requires only the division of the allotment in dollars by the current market price of the crude oil produced. The following table presents minimum allotments for wells of varying depths as determined by the formula given for the particular district which produces 75-cent oil.

Depth (feet)—	Minimum Allotment $/D	B/D
1,000	$3.00	4
2,000	6.45	8.6
3,000	10.45	13.92
4,000	15.00	20.00
5,000	20.25	27.00
6,000	26.30	35.05
7,000	33.25	44.30
8,000	41.20	54.90
9,000	50.40	67.20
10,000	61.00	81.30

Outline of Proposed Procedure

The sliding scale method of proration as here proposed may be best described by summarizing the procedure required for its application as follows:

1. Determine proved acreage of all properties.
2. Determine potential of all properties according to prescribed production practice.
3. Determine number of proved normal locations of each property.
4. Determine development percentage of the field by dividing number of wells by the number of locations.
5. Determine the allotment to be prorated on potential basis by multiplying field development percentage by total field allotment.
6. Determine the allotment to be prorated on adjusted acreage basis by subtracting the allotment for potential from the total field allotment.
7. Determine by the character of field development whether the allotment for adjusted acreage should be prorated according to proved acreage; relative worth or reserve index.
8. Prorate to each producing unit its proportional share of both the allotment for potential and the adjusted acreage allotment and add these two individual allotments together to obtain the total allotment of the producing unit.

If there are marginal wells or properties requiring special consideration, it will be necessary to subtract the total minimum allotment to such units from the field allotment before dividing and prorating the balance.

The individual property allotments thus obtained must be examined for the occasional instances where the allotment of a property might exceed its potential production or where the allotment as given might permit an unbalanced and inequitable production from some group of offset wells.

The sliding scale method of allocating production within the field is of course not so simple as the original methods of proration according to acreage or potential. However, if its use results in a more equitable distribution of the field allotment with due consideration for all

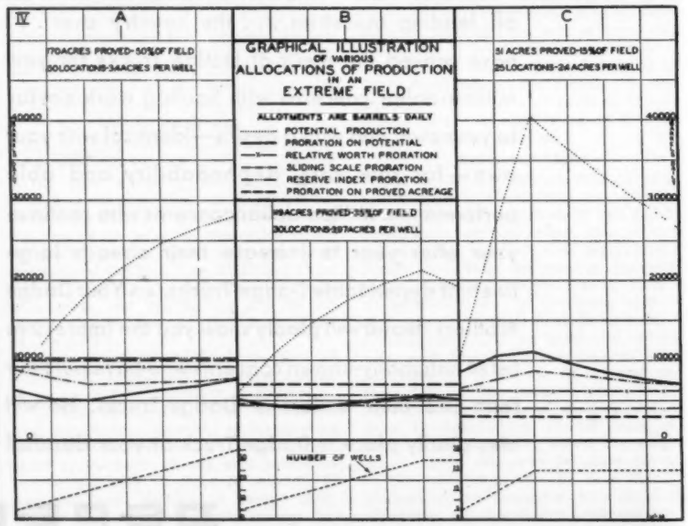

Plate 6—The case of the marginal well is here considered and one method of determining a minimum allotment for it is shown. The method illustrated is based upon the smallest daily revenue which will justify continued operation of a well of any given depth. Operating costs vary so much in different districts that the above curve or formula may not be generally applicable but the principle involved may be applied to any district.

Note—The cuts for Plate IV above and Plate VI on Page 56 are transposed.

important factors, it will mark a distinct improvement over any method that requires the individual consideration of all exceptional situations or special cases. Proration is apparently here to stay for some time and is now out of the experimental stage. Proration procedure, therefore, should be improved to the point where every operator is given the most equitable treatment possible under the circumstances. Proration may be considered as a science combining mathematics and economics and as such its problems do not call for blind or haphazard approximation, but rather for study and systematic analysis if the proper method of solution is to be found.

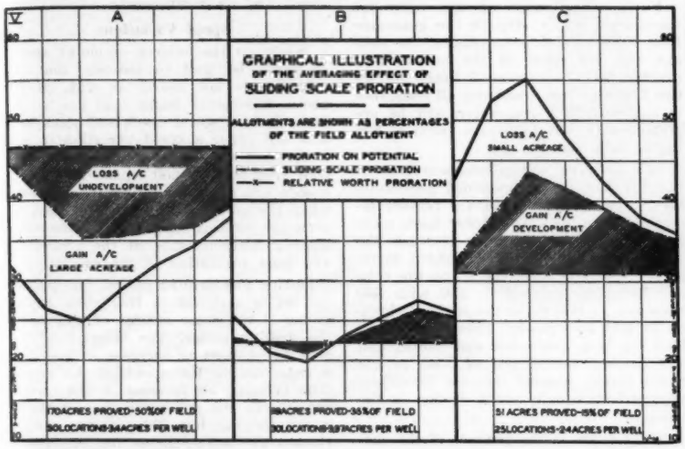
A
B
C
GRAPHICAL ILLUSTRATION OF THE AVERAGING EFFECT OF SLIDING SCALE PRORATION
ALLOTMENTS ARE SHOWN AS PERCENTAGES OF THE FIELD ALLOTMENT
PRORATION ON POTENTIAL
SLIDING SCALE PRORATION
RELATIVE WORTH PRORATION
LOSS A/C UNDEVELOPMENT
GAIN A/C LARGE ACREAGE
LOSS A/C SMALL ACREAGE
GAIN A/C DEVELOPMENT
170 ACRES PROVED-50% OF FIELD
340 LOCATIONS-2 ACRES PER WELL
68 ACRES PROVED-35% OF FIELD
340 LOCATIONS-2 ACRES PER WELL
51 ACRES PROVED-15% OF FIELD
255 LOCATIONS-2 ACRES PER WELL

Plate 5—The actual averaging effect of sliding scale proration is shown in this illustration. The relative worth proration is in effect a correction to prorate allotments on the basis of uniform development and it is therefore used as a basis of comparison. It will be seen that Property C derives a certain increase in allotment due to drilling investment and increased potential but is prevented by its relative worth from fully realizing an allotment based entirely on its potential. Property A with conditions reversed is limited only by underdevelopment from receiving the full allotment which its relative worth merits. The slight fluctuations of average Property C are also evident.

Table 1 gives the allocation of production to properties A, B and C of the extreme field as determined by five different methods of proration, and for seven successive proration periods. The figures as presented show the inequities arising from proration based on potential and on acreage and also show the averaging effect of sliding scale proration. This table is the source of the data presented graphically in Plates 3, 4 and 5.

DIESEL ELECTRIC POWER IS USED FOR DRILLING

(Continued from Page 56)

been in service ever since with good results.

The detailed specifications of the equipment are as follows: The engines are 210-horsepower, 6-cylinder, 4-cycle, of the full Diesel type. They operate normally at a speed of 600 r.p.m. and each weighs 15,400 pounds. Both are fitted with special flywheels having adapters for attaching the flexible couplings which connect directly with the shaft of the generators.

The generators are direct current 125 k.w., 250-volt, differentially wound, low center mounting type, with separately excited shunt fields for Ward Leonard control. The differential winding makes overloading of the engines an impossibility. Each generator weighs 4,500 pounds. Both have a double shaft extension, the commutator end of which is directly connected through a flexible coupling to 15 k.w. exciters. The exciters have the same mounting, speed and voltage rating as the main generators.

The three separately excited shunt wound motors that drive the drilling, and mud pumping units develop 150 horsepower at 450 r.p.m. on 230 volts. All are of the open self-ventilating mill type, however, provision is made for forced ventilation in the event explosive gases are encountered. The motors will also carry a greater overload more safely and for a longer period of time if they are cooled by forced ventilation. Eighteen-inch shaft extensions are provided for the "V" belt drive sheaves, though only the pump motors use this drive, power being transmitted to the drawworks and table through a 200-horsepower reduction gear. The ratio of this gear is 3¼ to 1. Each of these motors weighs 8,000 pounds.

Direct Current Favored

The generation of direct current in preference to alternating current in this case was a choice based on the recognized advantages of the former for drilling operations. It has great flexibility of control, a high torque at low speeds and a high efficiency for all loads. The 21 points of generator field control give a range that is not exceeded by steam.

The Ward Leonard system of control used with this equipment is based on a variation of the generator voltage. It requires no series grid resistance in the motor armature circuits to obtain speed variation, as in an alternating current system, a fact which means a greater saving in power. The generators are prevented from developing a voltage in excess of the amount needed by the motors for any particular speed by the differential winding. The loads which the motors are capable of handling are in direct relation to the voltage supplied and the possibility of overloading the engines is eliminated.

It is possible during heavy hoisting operations to parallel the two generators, thus furnishing energy to the drawworks motor for the development of 300 or more horsepower at 450 r.p.m., with 1,000 or more amperes at 250 volts. At such a time the fields of the generators are connected in series, thereby permitting them to be operated as one field through one controller. When starting in parallel there is a tendency on the part of the generators to assume unequal loads. Here again the drooping volt characteristic brings an adjustment, reducing the voltage of the high until it equals the low.

The control system provides through a series of interlocks on both drum switches, a means of preventing the paralleling of the generators when either field is excited. The same devices make it impossible to energize the pump motors except when the drum switch is in off position. Both of these are safety measures. The same is true of the automatic control which interrupts the field circuit of either generator when its amperage has reached 800 and has been maintained at that value for a period of 30 seconds.

Operating Controls

All operating controls, particularly those for emergency use, are located on the derrick floor within easy reach of the driller. These include oil immersed push button stations for both the pump and drawworks motors, drill motor control, and operating switch for parallel and separate operation.

The general sequence of operation with

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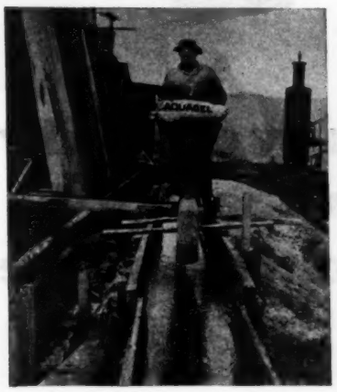
BAROID can be added to your regular Drilling Mud to increase its weight, or can be mixed with water to prepare extremely heavy thin muds. Drilling Muds made up from BAROID will positively not settle out of the hole, eliminating danger of stuck pipe and preventing fishing jobs. BAROID is non-abrasive, inert and does not gas-cut. For further information write for free copy of BAROID Bulletin.



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TROUBLE-PROOF COLLOIDAL DRILLING MUD

AQUAGEL is a uniform, high-grade specially treated pulverized clay, packed in 100-lb. sacks and carried in stock in all principal oil fields. Mixed with water in the proportion of 3% by weight, one ton of Aquagel makes 180 bbls. of extraordinary Drilling Mud for use where high pressures are not encountered—or added to your regular Drilling Mud in small quantities it will impart extraordinary characteristics to the mud.

AQUAGEL will: Prevent caving, prevent stuck drill pipe and casing; prevent loss of circulation; prevent mudding off of producing sand and prevent gas-cutting. It will keep all solids in the mud from settling out in the hole and will speed drilling by lubricating the drill pipe and walls of the hole. In cable tool holes all casing may be recovered if AQUAGEL-water fluid is used prior to setting each string. For further information write for free copy of our Mud Handbook.

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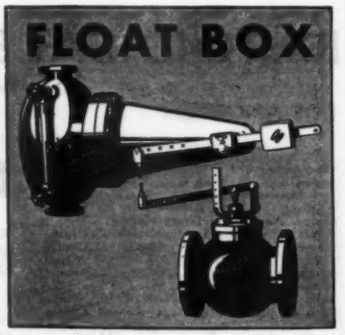

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full motor field gives a clear conception of just what takes place during any given load cycle. The drawworks motor controller is brought to the off position and the drawworks motor start button is pressed which closes all necessary contactors. Then a slight turn to the right of the controller hand wheel located on the drawworks post causes the contacts in the controller to close the generator field circuit through the entire bank of generator field resistance, building up the generator voltage slightly and starting the motor.

Further movement of the controller wheel cuts out a step in the generator field resistance thus increasing the voltage and the speed of the motor. This process may be continued until the entire 21 points are closed and all resistance is cut out, then the motor will be operating with 450 volts at a speed of 850 r.p.m. light load.

The drooping voltage characteristic of the differentially compounded generators makes itself apparent with a further increase in the load. The motor takes more amperage and the generator decreases the voltage until the motor is loaded to its capacity of 150 horsepower and the voltage has been reduced to 250 with 500 amperes. At this point the engine is loaded to 200 horsepower. This is the peak load for both generator and motor, and any further application of load to the motor brings a rapid increase in amperage, and an equally quick decline in the voltage.

Never again is the product of the current and the voltage, which represents the power, as great as when the generator stands at 250 volts and 500 amperes. This stage represents 200 brake horsepower on the engine, which is the maximum load that can be put on it with this hookup.

Any attempt to increase the load on a motor above 150 horsepower while using but one generator, merely causes it to take more current and results in lowering its speed. The voltage on the generator decreases to such an extent the actual horsepower required of the engine also decreases. If the load imposed is great enough, the motor will stall at 800 amperes and at a voltage of 40. Under these conditions the engine will be practically loafing. This stalling point might very well be destructive were it not for the fact that, within 30 seconds, a thermal overload relay opens the generator field and prevents any injury to either the generator or the motor.

The slowing down of the motor does not necessarily mean that its torque is being reduced. Quite the contrary. Under normal operation its torque increases as the speed decreases. It is the voltage applied to the motor and its field strength, that determines its speed; but the amount of armature current, and the strength of its field, determines its torque. For this reason, the Ward Leonard system makes it possible to deliver a high torque at any speed, and do it efficiently.

Speed Variations

While on the subject of motor speeds it would be well to indicate that the variation is not nearly as wide as the above statements might lead one to believe. Sudden power needs and quick shut offs will cause a speed variation in any motor, but the range in this case is seldom greater than 200 r.p.m. The engine speeds are not materially affected, even when the motor approaches full load, or even the stalling stage, due to nonoverloading characteristics of the generators and good regulation of the engines.

During any drilling period, one generator set is assigned to the pump motor, giving it the same system of control as the drilling motor. The clogging of the mud line causes an increase in load and a reduction in the speed of the motor, thus bringing an increase in the torque, but due to the generator characteristics it can put out but 200 per cent torque. Horsepower requirements for this condition are small, consequently the engine is not stalled even with a completely plugged line.

In the event of the failure of one generating unit, the other may be switched to the drawworks motor or the pump motors as conditions require. The above condition is an ever-present contingency. Should it present itself, the tools could be withdrawn from the hole provided that care was taken to stay within the power limits of the one generator.

By referring to Tables 1, 2 and 3 some idea may be had as to the cost of power for drilling with a hookup of this nature. There has been no small amount of skepticism as to the power requirements and speed of a hookup of this nature for pulling purposes, but some idea as to speed and power requirements may be had by referring to Table No. 4.

TABLE 1

	Mud pump unit	Drawworks unit	Total mud pump drawworks unit
K.w.h. generated	83,847	51,916	135,763
Fuel used (lbs.)	97,801.6	95,444.6	193,246.2
B.h.p. hours	115,093	76,487	191,580
Lbs. fuel per b.h.p. hr.	.85	1.25	1.01
Hours operated	2,273.4	2,597	4,870.4
Feet drilled	5,861	5,861	5,861
Lub. oil consumption (gal.)	455	803	1,258
Engine h.p. hrs. per gal. lub.	1,055	630	814

TABLE 2—COST OF POWER—FIXED CHARGES

Taxes	$384.00
Depreciation	3,763.26
Hurrican insurance	1,128.98
Total	$5,276.24
Fixed charges per k.w.h.	$0.0389

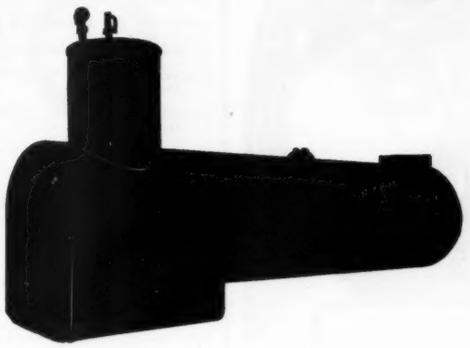
TABLE 3—COST OF POWER—OPERATING COST

Maintenance—This was a small item, but was charged off by the engine manufacturer as a developing cost due to the valuable information obtained through operation of these engines in this particular service.

Fuel oil, 26,900 gal.	$1,289.92
Lubricating oil, 1,255 gal.	734.08
Barging fuel and oil	245.24
Attendance	1,800.00
Total	$4,069.24
Operating cost per k.w.h.	$0.0300
Total cost of generating power	$9,345.48
Total cost per k.w.h.	0.0689
Cost per foot for power	1.595

TABLE 4

Depth of hole	No. of thribbles	No. of singles	Total time in min.	K.w.h. Gen. No. 1	K.w.h. Gen. No. 2	Feet hoisted per min.	Time required to pull one thribble
Coming Out							
2,932	32	1	50	45	45	58.6	1.56 min.
3,017	33	1	60	44	53	50.2	1.82 min.
3,024	33	1	63	43	47	48.2	1.9 min.
Going In							
2,932	32	1	45	13	13	65	1.41 min.
3,020	33	1	30	10	12	100.2	.91 min.



OIL COUNTRY BOILERS

	Pages
The Oil and Gas Journal	36
Second Publication	10
Third Publication	8½
Fourth Publication	0
Fifth Publication	0

The figures above were revealed in a recent check-up of display advertising space used by various manufacturers to sell their products. It is interesting to note that during the six months' period of time covered by the check-up, The Oil and Gas Journal carried almost twice as much space as was carried by the next four publications of national circulation.

Figures on the standing of The Oil and Gas Journal as compared with other publications in any specific field, will be gladly furnished on request.

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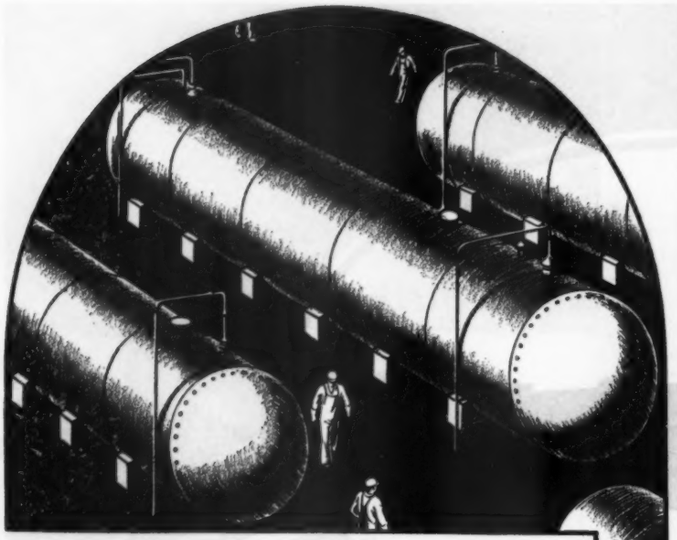

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WILDCAT OPERATIONS IN OKLAHOMA

(Continued from Page 25)

HUGHES COUNTY

Wright et al's No. 1 Ott, SE SW Sec. 15-5-11 ..... Shut down 1,645 ft.

KAY COUNTY

Wilwright Gas Co.'s No. 1 Wildegrube, NE SW Sec. 14-27-1 ..... Shut down 4,055 ft.; csg. collapsed, will abandon.
Lewis et al's No. 1 Harris, SE NW Sec. 14-25-1 ..... Location.
Peters & Buckles' No. 1 Hayes, NW NE NW Sec. 24-28-3 ..... Wilcox 3,662-65 ft.; water; P. B. to 3,185 ft.
Mummert Drlg. Co. et al's No. 1 Cormick, C NW SE Sec. 9-27-2 ..... Cleaning out 2,693 ft.
Blackwell Oil Co.'s No. 1 Harshman, Sec. 2-26-1w ..... Rig on ground.

KIOWA COUNTY

Christian's No. 1 Jones, NE SE Sec. 8-7-18w ..... Shut down 220 ft.

LATIMER COUNTY

P. English's No. 1 Unknown, NW SE Sec. 16-6-19 ..... Shut down 1,542 ft.

LE FLORE COUNTY

Sooner Oil & Gas' No. 1 Clyman, C S half NE NW Sec. 28-7-26 ..... Drlg. 1,780 ft.

McINTOSH COUNTY

Patterson et al's No. 1 Smith, SW cor. NW SE Sec. 32-9-16 ..... Drlg. 5,706 ft.

MURRAY COUNTY

C. R. Williams et al's No. 1 Williams, C NE NE Sec. 21-1-4 ..... Drlg. 805 ft.

MUSKOGEE COUNTY

H. E. Dowd's No. 1 Hembree, C NW NE Sec. 23-10-19 .. Shut down 1,257 ft.
Rebold's No. 1 Miller, SE NE NE Sec. 32-13-19 ..... Rig.
Sioux Oil Co.'s No. 1 Unknown, NW SE Sec. 21-11-19 .... Shut down 1,011 ft.

OKFUSKEE COUNTY

E. L. Robinson's No. 1 Rice, NW Sec. 2-10-9 ..... Location.
Shepard et al's No. 1 Nevens, SE NW SW Sec. 3-12-10.. Shut down 3,690 ft.

OKLAHOMA COUNTY

Citizens Oil Co.'s No. 1 Sage Barber, NE cor. Sec. 21-11-3w ..... Shut down 1,300 ft.
L. C. Hivick's No. 1 Sunset Addition, NW SW NW Sec. 17-11-3w ..... Shut down 5,515 ft.
J. F. Cuniff, trustee's No. 1 Church Land, NE NW SE Sec. 17-12-4w ..... Shut down 6,700 ft.

PAWNEE COUNTY

Comar's No. 1 Babstick, SW SE SE Sec. 18-22-5 ..... Shut down 3,403 ft.
Rookstool's No. 1 Wylie, NW NE SW Sec. 6-20-5 ..... Shut down 1,950 ft.
Sperry et al's No. 1 Mullrap, SE SW Sec. 2-22-5 ..... Drlg. 2,391 ft.
Cochran et al's No. 1 Green, NE cor. SW Sec. 15-23-5 .. Rig.

PITTSBURG COUNTY

J. Morrison's No. 1 Fowler, NE SE Sec. 13-7-17 ..... Rig.
C. Kennedy's No. 1 Travis, C SW NE Sec. 15-7-14 ..... Rig.
C. Canady's No. 1 Jones, NW cor. Sec. 14-8-14 ..... Rig.

POTTAWATOMIE COUNTY

Droppleman et al's No. 1 Jones, SE NW Sec. 21-8-3 .... Drlg. 4,847 ft.

ROGER MILLS COUNTY

Ute Oil Co.'s No. 1 Williams, C SW Sec. 23-12-24w ..... Drlg. 4,915 ft.
L. C. Hivick's No. 1 Davis, C NW NE Sec. 4-11-26w .... Fishing 2,956 ft.

SEMINOLE COUNTY

Sunray Oil Co.'s No. 1 Sunray, NW SE Sec. 35-5-5 ..... Location.

STEPHENS COUNTY

Ross Southerd's No. 1 McKinney, NE cor. Sec. 25-1-8w .. Shut down 1,063 ft.

WASHITA COUNTY

Cooper & Terhune's No. 1 Blocker, NW cor. Sec. 29-8-19w. Drlg. 1,875 ft.
Burns & Prince's No. 1 Deck, SW cor. Sec. 21-8-18 ..... Shut down 1,050 ft.
Petroleum Holdings, Inc.'s No. 1 Music, NW cor. Sec. 10-9-20w ..... Shut down 280 ft.

OKLAHOMA PANHANDLE

TEXAS COUNTY

Western Prod. Co.'s No. 1 Gable, C NE Sec. 24-4-13 .... Drlg. 50 ft.
Three Way Oil Co.'s No. 1 Crane, SW NW Sec. 11-1-1S .. Shut down 4,625 ft.

SOUTHERN OKLAHOMA

ATOKA COUNTY

Croxton & Bryant's No. 1 Miller, NW SE NE Sec. 9-1s-14. Shut down 670 ft.
Croxton & Bryant's No. 2 Miller, SW NE NE Sec. 9-1s-14. Show 3 bbls. 178-88 ft.
R. P. Whelan et al's No. 1 Howard, NW SE NW Sec. 6-4s-11 ..... Shut down 580 ft.
Brookshire's No. 1 R. W. Rowland, NW NE SE Sec. 18-3s-10 ..... Shut down 400 ft.

MARSHALL COUNTY

McCrory et al's No. 1 Little, NW SW Sec. 30-7s-6 ..... Bailing 10 bbls. of oil 495-97 ft.; recemented csg.
D. H. Curry's No. 1 Ward, NE SE SW Sec. 15-5s-6 .... Drlg. 2,300 ft.

McCURTAIN COUNTY

The Oil Journal's No. 1 Parks, C NE NW Sec. 9-6s-23 ... Shut down 50 ft.
Stewart's No. 1 Patterson, C SE SE Sec. 7-6s-24 ..... Shut down 400 ft.

WILDCAT OPERATIONS IN KANSAS

(Continued from Page 28)

RICE COUNTY

Solar Oil Co.'s No. 1 Zink, SE NW Sec. 3-19-10w ..... Rig.
Detrick & Langston's No. 1 Purcell, NW cor. Sec. 33-19-9w ..... Drlg. 1,547 ft.
McFadden and Shell's No. 1 Jennings, SW NE NW Sec. 29-18-6w ..... T. D. 1,450 ft.; plugging back to 1,136 ft.
Cress et al's No. 1 Sharp, SE NE Sec. 13-20-10w ..... Show oil 2,107-15 ft.; Siliceous 2,-230-36 ft.; estimated 1,500 bbls.; shut in.
Allison-Fitzwilliams' No. 1 Blake, NE NW Sec. 9-18-10w. Rig.

RENO COUNTY

Shell Continental's No. 1 Blake, SW SE SE Sec. 23-23-4w. Chat 3,267-3,308 ft.; 9,750,000 ft. gas; completed.

ROOKS COUNTY

Empire Oil & Ref. Co.'s No. 1 Halsman, SW NE SE Sec. 17-7-20w ..... Drlg. 3,360 ft.

RUSH COUNTY

Dewey & Mitchell's No. 1 Greenawalt, C SW Sec. 17-19-16w ..... Drlg. 3,285 ft.

RUSSELL COUNTY

Hall et al's No. 1 Mills, SE SW SE Sec. 30-14-13w ..... Show oil 2,902-08 ft.; drlg. deeper at 3,090 ft.
Agate Oil & Gas Co.'s No. 1 Rochfellow, SE cor. Sec. 6-12-12w ..... Shut down 3,374 ft.
Gilbreath et al's No. 1 Bratton, C NE Sec. 33-11-13w .... Show oil 3,090-94 ft.; shut down; T. D. 3,260 ft.

SEDGWICK COUNTY

Buck et al's No. 1 McNananan, NE NW NW, Sec. 2-29-1. Shut down 2,440 ft.

SALINE COUNTY

Stanolind Oil & Gas Co.'s No. 1 Martin Com., NE SE SE Sec. 3-16-3w ..... Underreaming 3,299 ft.; show oil.
Twin Mounds Oil Co.'s No. 1 Weis, C W half NE NW Sec. 20-13-4w ..... Shut down 2,700 ft.

SHERIDAN COUNTY

Flo et al's No. 1 Shoemaker, SE SW SW Sec. 27-7-26w.. Drlg. 2,015 ft.

STAFFORD COUNTY

Rosenthal, Stanolind and Amerada's No. 1 Gray, C NE Sec. 11-24-13w ..... Drlg. 2,315 ft.

STEVENS COUNTY

Argus Prod.'s No. 2 Christopher, C NE Sec. 16-33-39w .. Drlg. 5,420 ft.

SUMNER COUNTY

Spencer et al's No. 1 Porter, NE SW Sec. 12-33-4w ..... Rig.
Otstot et al's No. 2 Marlow, C SE NW SE Sec. 25-33-3w.. Drlg. 2,450 ft.

WASHINGTON COUNTY

Sincox et al's No. 1 Penwell, NW SE NE Sec. 16-3-3 .... Shut down 1,720 ft.

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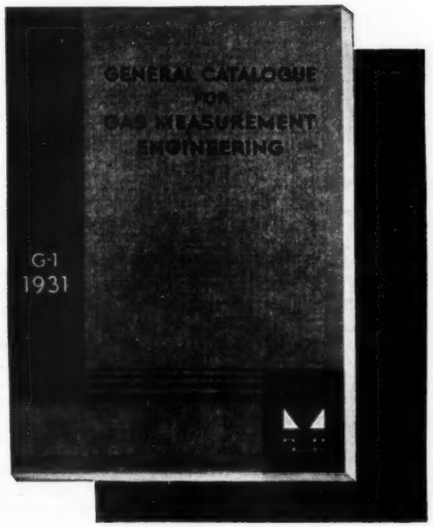

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INTERNAL COMBUSTION DRILLING ENGINES

(Continued from Page 49)

proximately 3,500 feet, it is reported that the average fuel consumption for the operation of two engines for 24 hours is 3 bbls., with approximately 3 gallons of lubricating oil. Water required for cooling engines is 2 bbls. per 24 hours.

Investment and Depreciation

As in the case of the gas engine, investment must be considered on a comparable basis to other prime movers. The full Diesel type equipment, where two engines with auxiliary equipment are furnished, the investment is approximately

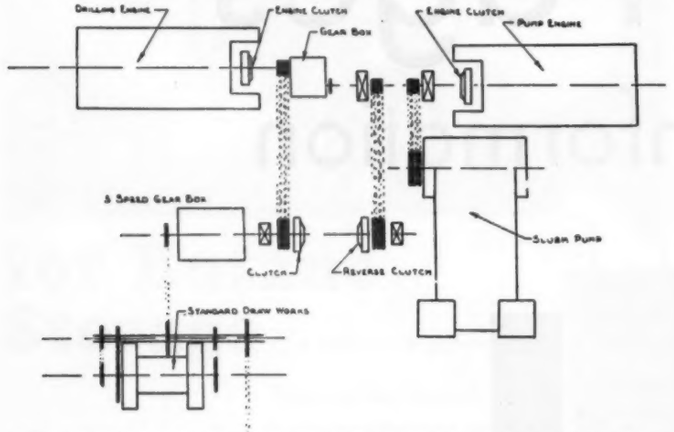

Figure 3—Diesel engine layout for rotary drilling, using two engines in combination.

25 per cent greater than for some of the other types of prime movers of equal capacity.

No definite depreciation rate has been established for this type of equipment for

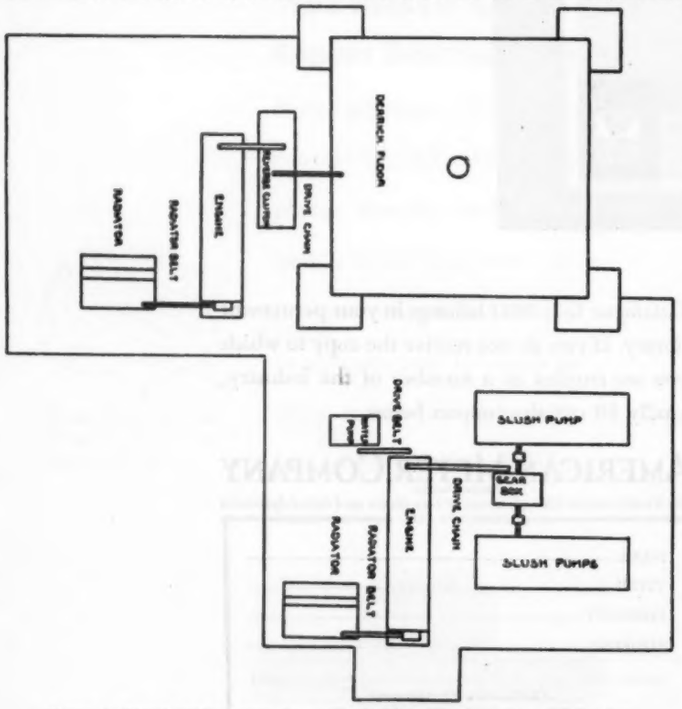

Figure 4—Diesel engine layout for rotary drilling, using two engines separately.

rotary drilling, but it will probably be close to that approximated for the gas or gasoline engines.

Conclusion

Faced with problems of drilling wells in wildcat territory, the internal combustion engine, of either type, may be used to distinct advantage.

The main advantage of the internal combustion engine for rotary drilling, from the standpoint of the well owner, is the low cost of fuel and water per foot drilled.

Some of the objections made relative to the high-speed, multicylinder, internal combustion engines for rotary drilling are lack of flexibility and limited power. These objections may be overcome by continued use and further development.

FLUID PROBLEMS IN THE GULF COAST AREA

(Continued from Page 52)

that line are the use of bits and core barrels that do not require withdrawing the drill stem from the hole for changing; the use of special flush-joint drill stem at the surface, dispensing with the grief stem and making it unnecessary to pull up to make drill pipe changes. It has been found effective to drill straight holes in penetrating "heaving shale," as the tendency in highly inclined formations is for the bit to try to penetrate in a direction parallel to the cleavages, which encourages the shale to sluff and heave. To prevent pump breakage and other shutdowns in the circulating equipment while attempting to drill the shale, the very heavy load on the circulating equipment can be eased up considerably by increasing the fluidity of the mud fluid.

Excessively Viscous Muds

Many of the drilling troubles which are experienced in Gulf Coast operations are directly attributable to muds of excessive viscosity. A highly viscous mud is not necessarily a heavy mud, but there is still a tendency in the field indiscriminately to apply the term "heavy mud" to any thick mud, regardless of its weight.

The most usual cause of the excessive viscosity in Gulf Coastal muds is due both to the quantity of colloidal materials in the natural mud and an excessive concentration of calcium compounds. The thickness of the formations, and the proportions and amounts of these materials vary, however, in different fields. The calcium carbonate concentration is particularly high in the Miocene beds. As drilling proceeds in these formations, the calcium compounds are picked up by the mud, with the result that the colloidal materials are fluffed by the calcium, increasing the viscosity considerably. If there is any free calcium compound left in the mud, it works on the colloidal materials picked up in deeper formations. These high viscosities have resulted in several types of drilling difficulties as follows:

A. Due to the sluggish nature of the mud, the circulating pump pressures are greatly increased. Pump pressures of 1,000 pounds per square inch are common, while peak pressures have run over 2,500 pounds.

B. The highly viscous mud builds up the wall of the hole excessively. This is detrimental to free circulation, and contributes to the high pump pressures.

C. The highly viscous mud does not release cuttings in the ditch; thus the concentration of sand and shale in the mud builds up to a very high point, frequently from 30 to 40 per cent of the volume of the mud. This results in excessive wear and tear of the pumps and other circulating equipment, and also in bridging in the hole.

D. The highly viscous muds are extremely susceptible to gas-cutting. A blowout is usually likely to occur if high-pressure gas is encountered when drilling with a mud of this type. High gas pressures are quite common in the Gulf Coast.

Thinning the Mud

The fact that the calcium compounds and colloidal materials, which cause the high viscosity, are gradually picked up from the formations while drilling makes continual thinning of the mud necessary when drilling in certain coastal areas. In many cases where the formations contain a sufficient amount of good mud-making materials, in addition to the calcium compounds, it has been an effective practice to thin the mud by the simple expedient of adding water to the mud in the ditch. Though this procedure has been effective in a great many cases, it has been necessary to watch the mud closely, since the tendency is to use either too much or too little water. Also, to thin the mud with water acts to increase the amount of free water in the mud, which is undesirable in drilling "heaving shale."

When it is desired to carry a heavy mud as a safety precaution against high pressure gas, the problem is to reduce the viscosity without affecting the weight. Chemical treatment has been effective for this purpose. Such treatment is still in its infancy, and considerable of the field work so far has been experimental. Some good results have been obtained, however, along with the accumulation of some useful fundamental information.

The less expensive chemicals that have been used in the field for the control of viscosity are: Caustic soda, either alone or in combination with organic acids, sulphuric acid solutions, hydrated lime, sodium silicate, and sodium sulphate. Numerous other chemicals have been used experimentally.

Chemical Treatment

It must be said that chemical treatment in the Gulf Coast has not reached simplicity of control where it can be made a generalized field procedure. Each well has had to be studied, and for effectiveness has required the attention of men acquainted with the fundamentals of colloidal chemistry. For those operators who do not have such men available, the manufacturers of commercial chemical treatment should be in a position to advise, demonstrate performance, and service their products.

As to some of the results obtained with simple chemicals in the field, a well at Moss Bluff illustrates a form of field treatment. In this well the first 1,700 feet drilled were sandy formations; and although the mud had good colloidal quality, it carried 30 per cent sand as it came from the well. Beginning at 1,800 feet, formations were encountered containing soluble calcium compounds, which thickened the mud as the hole was carried on down. Later it was decided to try thinning the mud with chemicals, in order to lower the pump pressures. This lowering of pump pressure was especially desirable at 5,820 feet to facilitate the cementing of the casing. Before thinning, the mud weighed 9.85 pounds per gallon, with a high undesirable viscosity. Two barrels of a sodium tannate solution were added to the mud over a period of three hours, after which the mud weighed 9.9 pounds per gallon, and the viscosity was reduced considerably. The thin mud was in use eight days without an increase in viscosity. Among the desirable results of this treatment, from a "heaving shale" standpoint, was that the free water in the mud was not increased, and the mud obtained increased chemical resistance to the disintegration of the shale. As a result of the treatment, the sand content of the mud at the suction dropped from 9 to 4 per cent; pump pressures dropped from an average of 500 pounds per square inch to an average of 300 pounds per square inch, and in the cementing job the highest pump pressure necessary to land the cement behind the casing was 1,250 pounds per square inch. High cementing pressures are prevalent with the thick muds in the Gulf Coast. These muds, with high colloidal content when thinned in this way, do not seem to have the undesirable washing effects in the hole while circulating, as is the case when the fluid is thinned with water. It is realized that the particular treatment just described was on a well in which the sand content, pump pressures, and depth were not so great, comparatively; but it is a recent occurrence, and serves well as a clear-cut illustration of some of the objectives and procedure of chemical treatment. Similar results were obtained in another well in the same field.

To illustrate some of the changes that take place from field to field, the same treatment was tried in a well at McFadden Beach. The calcium compounds and aluminum content of the mud in this well were considerably higher than those at Moss Bluff. Though the same chemical was effective, it required considerable amounts of the chemical, as the mud had to be treated more often.

Chemical Analysis

Chemical analysis of the solids in the natural mud at this well, when drilling at 2,500 feet and when drilling at 6,500 feet, before chemical treatment, are as follows:

	2,500 ft. (percentage by weight)	6,500 ft. (percentage by weight)
Aluminum	3.79	10.34
Iron oxide	6.46	19.21
Lime	4.93	3.39
Magnesium	2.68	0.53
Silica	71.16	66.96
Sulphate	0.00	1.00

Efforts are still being made at the time of this writing to simplify and reduce the cost of treating the mud in this well.

In treating muds with chemicals in the field one or more 50-gallon barrels are usually set over the circulating ditch near the overflow pipe. The chemicals are fed into the mud through a valve attached to the barrels.

The kind of chemical treatment and choice of chemicals depend upon the kind and proportions of the solids in a mud.

High Pressure Gas—Blowouts, Etc.

Attempts to prevent blowouts of high pressure gas by the control of mud fluid have been made since the early days of rotary drilling.

High pressure gas is of common occurrence in the Gulf Coast fields. The condition is particularly dangerous because of the fact that gas occurs at unexpected depths. The irregular and broken character of the coastal formations make it impossible to predict with any degree of certainty the depth at which these may be expected, even in

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fields which have been extensively drilled. For example, in the Pierce Junction Field, which has been producing for some 17 years, a large volume of gas, with a pressure of 1,500 pounds per square inch, was unexpectedly found within 1,000 feet of many producing wells. It was known, however, that there were plenty of gas pockets in that section, in as much as there have been blowouts since the beginning of the field. In fact, Pierce Junction has been one of the most serious offenders in this respect.

About five years ago, at the Batson Field, where more than 1,000 wells have been drilled since 1903, a blowout occurred when a well unexpectedly drilled into a little pocket of oil and gas which had not been hit before. When the well was finally completed in this formation, it flowed about 3,000 bbls. of oil the first day; 1,000 the second, and was dry in about two weeks.

Recently, at a wildcat out in the Mississippi Delta, the well (which was the first on the structure) unexpectedly had plenty of gas at 200 feet. The pressure was 100 pounds per square inch, and the combined volume and pressure was sufficient to blow out a crater that took rig, derrick and all. In the next attempt to drill this well this gas was cased off without any particular trouble; and a second gas was hit at 850 feet, where the pressure was around 500 pounds per square inch. This illustrates the need in many Gulf Coastal fields to keep the mud constantly controlled as a preventive against blowouts.

Some of the pressures that have been encountered in various fields during the past three years are as follows:

Field—	Pressure (lb./sq. in.)	Depth (feet)
Hull	3,000	5,500
Hankamer	500-2,000	2,000-5,000
Pierce Junction	1,500-2,500	3,000-5,000
High Island	3,300	6,000
Big Creek	1,000	3,000-4,000
Orchard	800	3,000

Quite frequently gas pressures are found somewhat above those corresponding to straight hydrostatic pressures at the respective depths. Perhaps the outcrops and water content of these formations, being at higher elevation than the wells, account for these pressures.

Much of the gas trouble which has been experienced in the Gulf Coast is directly attributable to the use of excessively viscous muds. These muds are extremely susceptible to gas cuttings, and are entirely unsuitable for use in the control of high pressure gas.

Aside from the tendency to gas-cut, the high viscosity mud makes it easy for the gas to "slug" the mud ahead of it. This has been the cause of many blowouts in which the gas follows the drill stem during pulling, pushing the mud ahead of it.

Weighting Materials

Weighting materials, to increase the weight of the mud fluid, have been added to muds for many years. This practice is familiar to everybody. Muds weighing up to 16 pounds per gallon are still used by some operators. There has been a tendency, however, to get away from such heavy muds, as they are often very susceptible to gas cutting. Muds which have entered holes at 14 to 16 pounds per gallon have frequently become gas-cut to 5 or 6 pounds per gallon. The specific gravity, which really counts in holding back high pressures, is that of outgoing mud fluid.

These weighting materials, however, have been of great value when properly employed. By proper treatment of weighting materials and natural muds to keep them in suspension, and by treatment with chemicals to reduce the viscosity, it has been found that a mud weighing not more than 12 pounds per gallon will adequately control the gas pressures now encountered in the Gulf Coast. It has been desirable to keep the viscosity less than 30 per cent above that of water.

To maintain the weight of a mud when drilling through high pressure gas, it has been necessary to employ methods to accelerate the release of gas from the mud. One of the methods that has been effectively used in the Gulf Coast is the use of two pits: One receiving the outgoing, gas-cut mud, in which the mud has been treated by heating or jetting it against a surface to break up the gas bubbles; the other pit to receive the treated mud for pumping into the hole. Other methods have been the use of extra wide circulating ditches containing dams or riffles, and the use of vibrating screens.

Drilling against a high back pressure caused by mechanical restrictions against the out-going mud has been found very effective. Where this has been done, it has been advisable to use a light mud, weighing 9½ to 10 pounds per gallon of low viscosity and good suspension qualities.

As to mechanical accessories and methods of killing blowouts, attention is called to the paper entitled "Equipment and Methods of Preventing Blowouts in Drilling," presented by the institute's southwestern district drilling practice committee at the Galveston meeting, September 4, 1930. Numerous other articles have described specific instances and methods of killing wells after the blowout has occurred.

Sand and Cuttings in the Mud

Troubles arising from failure of sand and cuttings to settle from the mud are intimately associated with the problem of excessively viscous mud. With muds of high viscosity, cuttings do not settle satisfactorily, and as much as 30 per cent by volume of sand or shale cuttings has been found in mud entering the hole. When combined with high circulating pressures this sand content is particularly detrimental to slush pumps, the liners of which are rapidly abraded by the sand-laden mud. High sand concentrations have resulted in bridging of the hole and in stuck drill stems, especially when salt-bearing formations or salt waters are encountered, causing the suspended solids to be precipitated from the mud and resulting in serious bridging troubles.

The chemical treatments already mentioned for the purpose of decreasing the viscosity of mud fluids apply to problems of removing sand and cuttings. Field treatment has held the sand content lower (below 5 per cent) because of improved settling out of sand in the ditches, due to lowered viscosity.

Aside from the treatment of the fluid to reduce viscosity and to encourage the release of sand and shale cuttings, a number of vibrating screens have been used effectively for this purpose in the Gulf Coast. These vibrating screens have been very effective in removing the shale cuttings and in removing the sand coarser than 60-mesh. They have removed sand between 60 and 80-mesh, but so far have not been very effective in removing sand finer than 80-mesh from the thick muds of the Gulf Coast. They have been very effective in removing "heaving shale" cuttings when penetrating or cleaning out these troublesome formations.

Use of Screens

In the arrangement of these screens at a well the overflow pipe empties the mud into an elevated trough, which has two gates. The vibrating screen is located so that the mud can run through one gate on the screen and then into the circulating ditch. The shale cuttings and sand are drawn off the screen to one side, where they can be disposed of. If it is desired to by-pass the screen for repairs or changes, the second gate is opened directly into the circulating ditch. Such an arrangement causes no loss of time when the machine is out of operation.

In a de-sanding arrangement of this type, one of the primary factors to be considered is the capacity of the screen. This is based on the mesh of the screen, the angle at which it operates, and the properties of the rotary fluid. When set on at an 11 degree angle, a 30-mesh will easily handle 250 gallons of mud per minute (with ordinary viscosity), while a 40-mesh will handle 160 gallons. When the angle is increased to 13 degrees, the capacity of a 30-mesh screen decreased to about 150 gallons per minute.

The screen is an aid to the driller in giving definite information, by means of cuttings, as to the formation that he is drilling.

Operators in California have done considerable work along the lines of de-sanding, both on individual wells and in central plants serving small groups of wells and whole fields. Results of their experiences should be very interesting and helpful in the Gulf Coast.

Chemical Contamination — Drilling Salt Formations — Salt Water Effects

Several drilling fluid problems arise from salt which is encountered in various ways in Gulf Coast drilling operations. These may be classified as follows:

(a) Use of salt water for making up mud fluid.

(b) Presence of dry salt in formations drilled.

(c) Salt water in formations.

(d) Drilling through solid rock salt.

The location of certain Gulf Coastal fields is such that it is either necessary to use salt water for making up mud fluid or to haul fresh water a long distance at considerable expense. The same condition applies to the availability of good surface clays for making up muds, as it is sometimes necessary either to bring in a clay from a considerable distance or to use surface clay which contains as much as 1 or 2 per cent salt. The action of dissolving salt in precipitating colloidal material is well known. Such salty material cannot be used in preparing drilling fluids without special treatment. By the use of calcium hydroxide (hydrated lime) or caustic soda, it has been possible to prepare satisfactory mud fluids, using water and clay which contains up to 2 per cent salt. This practice has been used effectively, and has resulted in considerable economies.

A well in southern Louisiana was faced with the necessity of transporting fresh water by barge for mud making. The cost of this hauling of water for mud making purposes would have amounted to approximately $16 per day.

The salt water available at this well contained 2.3 per cent salt. In this well one-half pound of hydrated lime was used per 100 gallons of mud. In adding the lime it was first mixed with water in the proportion of 15 pounds of lime per 100 gallons of water, and then added slowly at the rate of about 25 gallons per hour to the mud at the overflow pipe. As the action of the lime on the mud is rather slow, the muds must be watched for awhile before making decisions to make further additions of lime.

Similar methods of treatment to prevent precipitation have been employed when formations have been drilled that contain considerable quantities of salt.

High Concentration

In the coastal fields large flows of salt water of high concentration are occasionally encountered. Contact of the mud fluid with these waters results in the precipitation of the mud material. For this reason it has been extremely difficult to control such salt water flows after they have started, since the hole becomes clogged with precipitated mud material. Some of these salt water flows have been killed by forcing mud fluid into the formations under pump pressure. In some cases it has helped to rotate the drill stem while circulating mud against a fairly high back pressure. In some instances these salt water flows occur together with high pressure gas.

In some coastal fields it has been necessary to drill for a considerable distance through solid rock salt. Barber's Hill is an outstanding example of this condition. On a flank of the Barber's Hill salt dome, production is found below a thick, overhanging ledge of rock salt at around 7,000 feet. In this field the practice has been to set casing on top of the salt to protect overlying formations, then disposing of the regular mud, drilling through the salt with a saturated salt water solution, and setting casing as soon as the salt has been drilled through. The saturated salt solution is then disposed of and the regular mud again used.

Conclusion

In conclusion, it must be said that though considerable progress has been made towards the solution of these stubborn barriers to very deep drilling, most of the problems are sufficiently obstinate that a great deal still remains to be done. This is especially important in an area where only the very youngest of sedimentary formations have been penetrated.

There will be considerable satisfaction when the statement "abandoned heaving shale" disappears from logs of further deep tests.

GRAPHIC FORMULA FOR DETERMINING SPECIFICATIONS FOR WELDING STEEL

One of the greatest stumbling blocks in the universal application of arc welding has been the porosity in the weld or deposited metal, and the problem of eliminating this porosity has indeed been a baffling one. What causes one weld to be solid and dense and to be free from porosity and the next to be porous? The answer probably is—variability in the steel itself.

This great variance in the weldability of commercial grades of steel which has been so baffling, has recently been solved as a result of an extensive research conducted by Wilmer E. Stine of the research laboratories of the Lincoln Electric Co., Cleveland, Ohio. The solution is in the form of a graphic formula, known as the Lincoln-Stine equilibrium curve, by which the exact specifications for steels of good weldability can be determined.

Heretofore the difficulties encountered in producing sound welds in various grades of steel were believed to be due to the electrodes and process employed. Wilmer E. Stine thought otherwise, and proceeded to investigate on the basis that the difficulty lay within the steel itself. Due to this intimate knowledge of metals acquired from 12 years' service in the United States Navy as associate materials engineer, Stine realized that research beyond the usual analyses of steels was necessary. Data was collected from the steel producers as to exact conditions and methods under which the steel samples to be tested were made. With this information thousands of samples of steel were welded, tested and analyzed. The results of this research when plotted formed the Lincoln-Stine equilibrium curve.

How to determine the correct proportions of the elements in the steel for best welding becomes a simple matter with the use of the accompanying graphic formula. For example, if steel having .20 per cent carbon is required, the Lincoln-Stine equilibrium curve shows that the silicon content should be approximately .021 per cent; the manganese .40 per cent. If the steel has been deoxidized in manufacture

Wilmer E. Stine

by the addition of aluminum, the amount of this element present should not be more than .002 per cent. Thus, for any required carbon content of steel, correct proportions of silicon, manganese and

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NEW METHODS OF SECURING POTENTIALS

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the Thursday morning session, devoted principally to reports of progress made in the study of pipe line corrosion.

Dr. Gordon N. Scott, A.P.I. Research Association, United States Bureau of Standards, made his report on work he has done in the past year on the study of pipe line corrosion and explained in some detail the methods now used in determining resistivity and corrosivity of soils. A brief outline of the printing method for determining extent and position of corrosion products on pipe under protective coatings was carried in the May 21 issue of The Oil and Gas Journal on Page 42 and E. R. Shepard, United States Bureau of Standards, prepared a complete article describing his method of "Determining the Corrosivity of Soils," which is followed largely by Doctor Scott and described by him at this meeting. This article by Mr. Shepard appeared on Page T-40 of the annual pipe line edition of The Oil and Gas Journal, June 4.

Doctor Scott outlined the work to be done at Spindletop Gully June 5 and 6 when numerous pipe specimens were to be uncovered and coated pipe line examined, and the methods referred to used in these determinations.

Dr. H. K. Logan, also with the United States Bureau of Standards, presented his paper on "Soil Corrosivity Surveys," printed in the June 4 issue of The Oil and Gas Journal, Page 28. This is a comprehensive study of the limitations of and bases for soil corrosion surveys along pipe line routes and describes some of the survey methods which have been developed and used for such work.

The third paper was read by David Trax of the Gypsy Oil Co., Tulsa, but was prepared by R. S. Cole of the same company and discussed "Legal Phases of Oil Field Pollution."

"Economic Aspects of Accident Prevention," by George F. Prussing, Union Oil Co. of California, Los Angeles, completed the Thursday morning program. Mr. Prussing pointed out the financial value of safety work and stated his company has saved upwards of $100,000 yearly by the maintenance of a safety department at a very small cost.

Thursday Afternoon Session

A number of valuable and instructive papers were presented Thursday afternoon at a session presided over by J. R. Gignoux, Shell Oil Co., Los Angeles. These had to do with drilling practice and the subjects covered ranged from rotary bit treatment to drilling mud practice, boiler tests, the use of internal combustion engines for rotary drilling and Diesel powered drilling units.

In a paper by Blaine B. Wescott, the Gulf Companies, Pittsburgh, Pa., entitled "Hard-Surfaced Rotary Bits," the commercial development of both sintered and fused tungsten carbides was outlined and consideration of the chemical and physical properties of both types of super hard materials briefly sketched. Methods of manufacture and application to and the effect on bits were illustrated.

"California Rotary Drilling Mud, Its Development, Reclamation and Disposal" was discussed by E. P. Tallant of the Union Oil Co. of California, Santa Fe Springs, Calif., in the next paper and a description of clay mining, mixing and transportation given, with methods used in separating sand, oil and gas from used mud and methods and cost of waste mud disposal outlined.

Three authors collaborated in preparing a paper on "Drilling Fluid Problems and Treatment in the Gulf Coast" when W. T. Doherty, Humble Oil & Refining Co., Houston, Tex.; Dr. Stanley Gill, Gulf Production Co., Houston, Tex., and C. P. Parsons, Halliburton Oil Well Cementing Co., Duncan, Okla., prepared their paper. This paper deals with the characteristics of the Gulf Coast formations, problems involved and causes, as well as remedial and preventive treatment.

"Oil Field Boiler Tests," by Hu M. Harris and J. E. Eckel, both with Humble Oil & Refining Co., Houston, was next presented and described results of actual tests made on three types of locomotive boilers, that is, regular type, thermic siphon type and application of super heaters. The tests included comparisons of different kinds of steam produced and steam requirements for drilling rigs in the Gulf Coast area.

David L. Trax, Gypsy Oil Co., Tulsa, and R. R. Hawkins, The Texas Company, Tulsa, prepared the next paper presented on "Internal Combustion Engines for Rotary Drilling," which covered operation, maintenance and economy of internal combustion engines in rotary drilling and included a statement of cost of fuel and water for drilling to various depths. Engines operated by natural gas, gasoline and fuel oil were considered.

"Diesel-Electric Power for Drilling" was a paper presented by B. L. Moore, electrical engineer, Humble Oil & Refining Co., Houston, Tex., which dealt with generating both direct and alternating current for use as motive power for drilling rotary wells. Methods of controlling peak loads were described and some figures given on approximate costs of the whole installations.

The last paper, on "Behavior of Mud Pumps," by Harry E. Hayes of the General Petroleum Corp. of California, Los Angeles, Calif., outlined mud performance and the behavior of pumps and its reaction to a given drilling condition. The laws of flow and values of the constant "K" used in various formulas were discussed and well illustrated by several groups.

All of these papers were discussed quite freely and many of the discussions were prepared in advance of the meeting so careful thought had been given to each subject.

Much of the success of these technical sessions is to be credited to C. V. Millikan, Amerada Petroleum Corp., Tulsa, who was chairman of the program committee. Only through his untiring efforts and plans made well in advance of the meeting was it possible to secure such a group of outstanding papers for a meeting of this kind, and with the discussions, will form an important part of the engineer's and production man's library.

This completed the meetings of the institute at Dallas but the board of directors held an executive session in the Longhorn Room No. 1, Texas Hotel, Fort Worth, Tex., at 10:30 a.m., June 5, at which several resolutions were passed and other executive business transacted.

Many visitors to the Dallas meeting went to Beaumont, Tex., to be present at the examination of corrosion specimens to be exposed and tested under the supervision of Doctors Scott and Logan as part of the co-operative corrosion tests now being conducted by the A.P.I. corrosion committee.

MARKET FOR SPECIALTIES CONSTANTLY EXPANDING

(Continued from Page 18)

to go more into detail further along in this article, touching upon the manufacturing procedure, this list, which might be extended almost indefinitely, will be terminated here.

Manufacturing Processes

It must be pointed out here that the major companies have made heavy expenditures in perfecting the products they offer as "specialties." Many of the processes are covered by patents and it should not surprise one to discover that the methods of manufacturing these products and by-products are closely guarded secrets. The various procedures to be related here should serve merely as starting points for further study and development. Two examples may clear up this position. It is well known that special lubricants such as those used in sewing machines and typewriters must be highly refined. Twenty days are required by Standard Oil Co. of Indiana to process its "Finol." In making oil sprays for insecticidal purposes the general procedure has been produce kerosene extracts of pyrethrum which prove highly effective for this use. Here again the Standard company set to work to bring out a superior product and its "Superla" insect spray has the advantage of being odorless, harmless to all but insects, nonstaining, of comparatively low flashpoint and speedily effective on such hardened creatures as cockroaches. This was a work of several years. An entomologist, whose business it is to know the weakness and strong points of insects, is on the staff of the research department and continues to devise new and better means of exterminating these tiny pests and disease carriers.

Manufacture of tree sprays is an important item. Damage to plant life may result from the application of unmodified oils and it is advisable to emulsify the oil with soap solution. Lubricating distillates are used because their properties make them toxic to insect life. Kerosene containing Bordeaux mixture may be used. At the dairy the choice of an insecticide calls for a product which is powerful but will not injure the skin and which is free of odor as milk very readily picks up odors.

List of Specialties

The following list of specialties will indicate the extent to which Standard Oil Co. of Indiana has covered the the field, and the recital is by no means exhaustive:

Automobile polish, an oil-in-water emulsion with the special feature of stability and containing friction ingredients in a proportion which assures the bringing out of a bright and smooth finish with a minimum of effort yet will not wear through the enamel or Duco throughout the life of the automobile. Technical oils, which are highly refined products, have the advantage of greater stability over animal and vegetable fats and are thus important ingredients of nearly all cosmetics, such as cold, vanishing and cleansing creams, rouges and lipsticks, hair tonics and pomades. Such oils are useful for lubricating machinery in cloth mills where inferior lubricants might injure the fabrics.

Dripless oils and rayon oils are used as lubricants where the value of a product might be destroyed by oil stains. Dripless oils consist of light bodied oils containing thickeners similar to those used in greases and their name explains their special characteristic. Rayon oil is used to lubricate the fibers of natural silk, rayon and celanese so that these may be knitted into fabrics. While olive oil, lard oil and many other animal and vegetable oils which may be used decrease the strength of the thread by half in a short time and completely destroy it, if not washed out before storing, the petroleum product is free from this fault.

Five grades of medicinal white oils are made by this company. These oils are good laxatives and are not absorbed by the system. Their action is purely mechanical and has no effect on metabolism. These oils are also used in the better grades of cosmetics and where special lubricating problems must be met, as in food shops, candy kitchens and the like.

Cutting Oils

Petroleum cutting oils are rapidly taking the place of animal and vegetable (fixed) oils. Mineral oils are more uniform, do not rancify or foster bacterial growth, cause less skin trouble, and come from a more abundant source. Where lubrication is also desired in a cutting fluid an emulsion of petroleum oils, or mineral oils compounded with fixed oils, is used. Lubricating fractions of a wide range of viscosities are used in making these cutting fluids. A sulphonated product or a soap may be used as the emulsifying agent. Alcohol may be used to facilitate dispersion of the oil in the water. The Indiana Standard is producing some specially prepared cutting oils which are making a remarkable showing in the machine shops. The addition of sulphur to the compounded portions of the cutting oils has been found to improve the product. Careful selection of the lubricating base used is important as an ill choice may cause skin irritation to workmen and even serious skin disorders.

Greases

The agricultural sections offer a vast market for the enterprising refiner. This company offers the farmer a mica axle grease which will rid his hogs of lice and mange, and at a slight additional cost an automatic hog greasing post. Other items include harness oils, leather dressings, cream separator oils, ice machine oils, silo and well waterproofing, and blacksmith oils.

Cup greases, depending upon the service expected of them, are made of lubricating oil and any of several kinds of

BUREAU OF MINES REPORT SHOWS EFFECT OF EAST TEXAS OUTPUT

According to reports received by the Bureau of Mines, Department of Commerce, the production of crude petroleum in the United States during April, 1931, amounted to 73,101,000 bbls., a daily average of 2,437,000 bbls. This represents an increase over the daily average of the previous month of 198,000 bbls., but was 136,000 bbls., or 5 per cent, below the daily average of a year ago. The center of interest during the month was the East Texas Field, now being rapidly developed. The daily average output of this field in April amounted to 251,000 bbls. as compared with 93,000 bbls. in March. This field is now the leading producing district in the country, exceeding even the extensive West Texas Field. A total of 197 wells were completed in the East Texas Field in April; these had the exceptionally high average daily initial production of 6,600 bbls. The output of the majority of the other producing fields remained virtually stationary, except for Oklahoma City Field, where production was stimulated by increased demand from refiners.

Although the increase in demand for crude by refiners was offset by the increase in output, crude stocks east of California continued to decline. However, the decrease in these stocks in April, approximately 1,100,000 bbls., was considerably under the average for the past eight months. Stocks of crude in California remained practically unchanged during the month. The decrease in crude stocks east of California was more than offset by an increase in fuel oil stocks, with the result that total stocks of all oils increased 56,000 bbls. during the month, the first increase since May, 1930.

Refined Products

The daily average crude throughput in April amounted to 2,490,000 bbls., an increase over March of 116,000 bbls., but a decline from a year ago of 191,000 bbls.

The increased crude throughput was reflected in an increase in motor fuel production of 7.3 per cent over March. Imports of gasoline were lower but exports were higher. The indicated domestic demand for motor fuel amounted to 33,400,000 bbls., or a daily average of 1,113,000 bbls. This represents a decline of 3.3 per cent from a year ago. Stocks of motor fuel on April 30 amounted to 48,587,000 bbls., an increase of 362,000 bbls. over the stocks on hand at the first of the month. These stocks represent 39 days' supply as compared with 44 days' supply on hand a month ago and 41 days' supply on hand a year ago.

The refinery data of this report were compiled from schedules of 349 refineries, with an aggregate daily recorded crude-oil capacity of 3,743,990 bbls., covering, as far as the bureau is able to determine, all operations during April, 1931. These refineries operated during April at 67 per cent of their recorded capacity, given above, as compared with 342 refineries operating at 64 per cent of their capacity in March.

soaps. Here three soaps will be differentiated, sodium, calcium and potassium soaps. The stiffness of the grease is increased with the addition of soap. Graphite is sometimes added to cup grease. Fiber grease is usually made by saponifying a fatty oil with sodium or potassium hydroxide and a little water. On completion of saponification the water is boiled out and the mineral oil added. This grease is distinctly fibrous and remains closely meshed with cogs and gears. Stearic acid may occur in a free state in some greases and as it attacks iron, steel and alloys, it must be avoided.

Petroleum oils, or those known as soluble oils, are used in the steel industry to bring out certain characteristics of this metal. The oils are classed as quenching fluids and tempering fluids. By using a quenching oil instead of water the temperature of the steel is not lowered so rapidly and the metal is less brittle yet extremely hard. To impart more toughness to the steel a gradual heating process is used with the aid of tempering oil. The oil is also a rust preventive which is decidedly not the case with water.

Certain types of oils are used in brick making to lubricate the molds, dies or the bricks themselves. Oils are also used in turning out pottery ware, and are added to concrete to prevent it from sticking to the form.

Products known as soap oils are used almost wholly in the manufacture of liquid soaps. Mineral oils are good solvents of dirt of greasy or oily nature, but their principal use is as filler because they do not combine with caustic to form true soaps and will not emulsify or loosen dirt which they cannot dissolve. Denaturing oils are petroleum products which are added to condemned fats by meat inspectors. These impart an unbearable taste and odor which cannot be removed readily.

Turpentine Substitutes

Turpentine substitutes are well refined fractions of relatively narrow boiling range. They contain none of the very light constituents present in gasoline and no heavy ends. No acids or reactive sulphur compounds may be present to conflict with the pigments and other paint and varnish ingredients. Sometimes an inferior material is offered as turpentine substitute. Holde, on pages 128 and 129 of "Hydrocarbon Oils and Saponifiable Fats and Waxes," second English edition, gives a number of tests. The fractions should not contain unsaturated hydrocarbons which might cause changes. This precaution is very carefully observed in the preparation of pharmaceutical oils where the lub fractions from selected crude oils are very drastically refined with concentrated and fuming sulphuric acid, washed with dilute alcohol before alkali neutralization to remove sulphonic acids and avoid emulsion difficulties, and then filtered slowly.

Acids

Sulphonic acids are thought to be principally sulphuric acid esters formed by the addition of this acid across the double bonds of olefins, as they occur in petroleum refining. They may be extracted by dilute ethyl alcohol. In the presence of water they are effective emulsifying agents.

Naphthenic acids may sometimes be recovered as their corresponding soaps when the kerosene or gas oil distillates are washed with alkali. Phenols may also be present and these may be separated from the naphthenic acids by converting the latter into esters and extracting the phenols with alkali. Among uses which have been suggested for naphthenic acids are antiseptics (phenol esters), wood-preservatives (copper and tin salts), soaps and soluble oils (for insecticide oils, cutting oils, wood oils), antifouling paints for ships' bottoms.

Cracked products and the "waste" gas produced in pyrolitic operations, contain special hydrocarbons which have set scores of investigators on the trail of a new field for profit. Popular accounts of the work of these students have given it a glamour which may some day invite the genius of a Raffles. More circumspect reports have made many of the conclusions appear "far-fetched." Between these two viewpoints there is a sane middle ground which has provided valuable material for the columns of The Oil and Gas Journal. Here it is proposed to discuss briefly under two heads, "Products Derived by Chlorination," and "Products Derived by Oxidation."

Petroleum fractions are chlorinated as an intermediate step to other products. In the chlorinated petroleum product the chlorine atom may be displaced by an hydroxyl or carboxyl group. Thus, as pointed out by various students, pentane may be converted to mono-chlorpentane, then hydrolyzed with sodium acetate under pressure and under certain other conditions, to produce amyl alcohol. Amyl acetate may be produced directly if glacial acetic acid is used for hydrolyzing. When not an intermediate, chlorine may be the means of producing carbon tetrachloride, chloroform and methyl chloride from methane and ethane.

Oxidation of gaseous and low boiling petroleum hydrocarbons has yielded aldehydes and acids. The product which is probably more familiar is formaldehyde. Platinum is sometimes used as a catalyst and the oxidation is closely controlled. When submitted to the action of ozone petroleum oils have been readily attacked yielding ozonides which are gummy brown deposits. These ozonides decompose on contact with water and give more permanent resins which may be used as varnish materials.

EASTERN FIELDS

(Continued from Page 58)

farm in East Finley Township, Washington County, was completed as a 3-bbl. producer.

In Washington County the Union Gasoline & Oil Corp. completed its well on the George Sprowls heirs farm in East Finley Township as a dry hole, and the drilling operation of the Carnegie Natural Gas Co. on the A. Ewing farm in the same township was likewise completed as a dry hole. No. 703 of the Natural Gas Co. of West Virginia came in as a dry hole at 3,389 feet. This well is on the S. A. Post farm in South Franklin Township.

The Convex Glass Co. drilled its test on the Charles Vanvoorhis farm in Dunkard Township, Greene County, to 2,426 feet, where it was found dry. It will be abandoned.

Drilling in Southwest Pennsylvania

In Washington County, M. Green & Co. have reached 1,700 feet in their test on the John Craig farm in Donegal Township. Potts Brothers have a rig standing on the A. Woodruff farm in Chartiers Township.

The test of the Carnegie Natural Gas Co. on the F. G. Jacobs farm in Center Township, Greene County, is at the 1,625-foot level. In the same township J. B. Orndoff has drilled his test on the J. E. Scott farm to 2,100 feet. No. 3,443 of the Manufacturers Light & Heat Co. is drilling at 1,565 feet on the Felix Bell property in Wayne Township. In a test on the William Jones farm in Wayne Township D. L. Shafer & Co. are shut down after drilling to a depth of 850 feet.

ROCKY MOUNTAIN AREA

(Continued from Page 36)

Dome, joint with the Texas Pacific Coal & Oil Co., had water at 1,360 feet which it could not shut off, and is plugging back to the Eagle at 1,285-1,305 feet where it had 1,500,000 feet of gas.

Liberty County

G. G. Howard and others' No. 2, C SE SW, Section 7-36-6e, Bear's Den, has rig up. It is one-fourth of a mile north of their No. 1 Schoonover, recently completed as a gas well. People's Oil & Gas Co.'s No. 1 First National Bank, C SE NW, Section 17-36-6e, is moving in materials.

Teton County

California Co.'s No. 1 Sullivan, NW NE NW, Section 34-27-7w, Bynum-Pendroy district, is spudding at 300 feet, and Earl Oil Corp., Ltd.'s No. 1 Gad, SE cor. NE, Section 22-2-8w, is drilling at 2,050 feet.

UTAH

Utah Southern Oil Co.'s No. 1 Balsey, C NE NE, Section 21-23-21, Salt Valley, Grand County, is drilling and coring in shale at 3,400 feet. It had a show of live oil in conglomerate shale at 3,387-90 feet. This is a joint test with the Mountain States Petroleum Corp. and Utah Oil Refining Co., and has the lower Pennsylvanian as its objective.

Runs From the Fields

Average daily pipe line runs in week ending June 6:

WYOMING	
Salt Creek	24,840
Big Muddy	1,840
Byron	10
Dallas-Derby	650
Dutton Creek	40
Elk Basin	630
Ferris	30
Frannie	900
Grass Creek	2,070
Hudson	320
LaBarge	1,390
Lance Creek	260
Lost Soldier	3,690
Lovell	.....
Oregon Basin	1,440
Osage	1,290
Rock River	1,920
Poison Spider	170
Simpson Ridge	.....
South Casper	570
Teapot	20
Warm Springs	.....
Total Wyoming	42,080
MONTANA	
Buckley-Border	700
Cat Creek	1,040
Dry Creek	510
Kevin-Sunburst	4,420
Lake Basin	50
Ponder's	1,360
Total Montana	8,080
COLORADO	
Florence	400
Fort Collins	950
Iles	1,040
Moffat	930
Orchard	350
Rangely	20
Tow Creek	350
Total Colorado	4,040
NEW MEXICO	
Rattlesnake	1,035
Hogback	450
Table Mesa	80
Artesia	1,011
Cap Rock	197
Getty	250
Hobbs	35,995
Jal	1,200
Lea City	2,600
Eunice	450
Texas-Pacific area	.....
Total New Mexico	43,268
Total Rocky Mountain fields	97,468
Total previous week	100,419
Difference	-2,951

CANADIAN FIELDS

(Continued from Page 58)

mated to have been more than 1,000,000 bbls. of crude naptha, representing a gross revenue of close to $4,000,000. It is planned to clean out the hole to the present bottom and run new casing, the belief being that the failure of production is due to freezing and defective casing rather than to exhaustion.

Imperial Drilling

In South Turner Valley, Lowery Petroleums' No. 2, NW Section 17-19-2w5, is continuing its production test of the lime at 6,433 feet with no definite results yet. Sterling Pacific Oil Co.'s No. 2, LSD 10, Section 33-18-2w5, has spudded in and is drilling at 89 feet.

In South Turner Valley, East Crest Oil Co.'s No. 3, LSD 4, Section 16-19-2w5, is still clearing itself of lime fragments, but shows some increase in production. President Louis Blake Duff and other officials will visit Calgary shortly, when plans will be made for further work, which may include the cleaning and deepening of East Crest's No. 1, a small producer.

Central Turner Valley

In Central Turner Valley, McLeod Oil Co.'s No. 3, LSD 16, Section 1-20-3w5, is cleaning out with considerable increase in wet gas production.

British Dominion Oil & Development Corp.'s No. 2, LSD 6, Section 12-20-3w5, is deepening below 5,198 feet and will probably be carried to a lower porous horizon around 5,225 feet. The previous wet gas production was taken from 5,077 feet. No. 3, same LSD, is making between 30 and 40 bbls. after a shot. Shareholders of the company at their annual meeting recently re-elected the following directors: J. H. Goodwin, Dr. M. C. Costello, Dr. R. M. Cook, A. H. Goodall, W. Matthew and T. Langley Webb. Official figures show that British Dominion's No. 1, which holds the depth record for Canada, cost $152,378.39; No. 2 producer, $160,979.24, and No. 3 producer, $116,045.08.

Hudson's Bay Tests

In the Keho Lake district, southern Alberta, Hudson's Bay Oil & Gas Co.'s No. 1 Keho, LSD 2, Section 17-11-22w4, is at 4,060 feet, underreaming and carrying casing. The drill is apparently still working in the Bentons. Oil from the sand at 3,776 feet is still seeping into the hole. Adjacent acreage is reported to have been pretty well leased up since the strike a few weeks ago.

In the Castor district, Hudson's Bay's No. 1 Paintearth, LSD 5, Section 27-29-15w4, is drilling in the limestone below 4,342 feet after running 6⅝-inch casing to 4,337 feet to shut off the water horizon. This is the most northerly well drilling in Alberta.

Border Fields

In the border areas, Alberta Pacific Consolidated's No. 1 Cole-Hunter, LSD 3, Section 11-10-17w4, in the Taber district is drilling out cement after setting 6⅝-inch casing and will test production in a 15-foot oil sand, around 3,327 feet.

On the Spring Coulee structure, Alberta Pacific Consolidated's No. 1, LSD 12, Section 15-4-23w4, is reported cementing back to 5,892 feet preparatory to shooting one of the upper oil sands.

On the Lethbridge structure, Texas-Imperial's No. 1, LSD 14, Section 22-8-22w4, is drilling at 2,782 feet. It is unofficially reported that some core drilling is being done for Imperial Oil, Ltd., on the Jack Akitt farm east of Carmangay.

Red Coulee Producer

On the Alberta end of the international Red Coulee structure, Southern Alberta Exploration Co.'s No. 2, Section 3-1-16w4, has been deepened to 2,410 feet and is testing production. Crude oil rose 1,500 feet in the well, which looks like a fair commercial producer.

In the Twin River area, Parco Oil Co.'s No. 1, LSD 16, Section 34-1-20w4, is reported rigging up. Location is on a dome discovered by Nordon Corp., which has 13,000 acres in this area and has drilled a series of structure tests.

Weymarn Drills in Lime

In the southern Foothills, Alberta Pacific Consolidated's No. 2 Weymarn, LSD 5, Section 7-6-1w5, in the Pincher Creek area, is drilling below 2,745 feet after getting the limestone at 2,700 feet. The lime contact was got at somewhat shallower depth than in the Turner Valley Field, but so far it is not definitely indicated whether the deep formation will prove productive. In the Turner Valley a show of wet gas was frequently met at or just below the contact, with the main wet gas production between 150 and 250 feet in the lime, though some of the South Turner Valley wells went considerably deeper in the lime to get commercial production. This is the seventh of the foothills structures where the lime has been penetrated. The first of these, the Turner Valley Field, has been the only large commercial producer. On the Waite Valley structure no production was secured; on the Moose Dome, a small gas production; on the Highwood structure one well out of three got some gas; on the Morley Reserve a small gas flow was reported, and on the Herron structure results so far have been inconclusive. Weymarn's No. 2, like the original Turner Valley Field, got a small production in the upper horizons.

Drilling in the Foothills

On the Moose Mountain structure, Graystone Consolidated Petroleums' No. 1, formerly Signal Hill Oil Co.'s No. 2, LSD 9, Section 34-23-5w5, is preparing to resume at 4,165 feet, thought to be close to the lime, after encountering some encouraging shows of light crude in the upper horizons.

On the High River-Aldersyde structure, Ranchmen's Gas & Oil Co.'s No. 1, LSD 16, Section 13-20-29w4, resumed drilling recently at 4,740 feet and is making new hole below 4,790 feet, with a considerable gas flow reported. At this depth the test is working in shale close

to a potential oil sand, according to geological reports.

In the Wainwright Field, Montreal-Alberta Oils' No. 1, northwest of Wainwright, is reported rigging up.

In the Irma district, David Credille and associates are reported drilling a test for gas, which will be piped to Irma. Following completion of this test, Mr. Credille will complete London-Ribstone Oils' No. 2, LSD 5, Section 22-43-3w4, in the Ribstone Field, which has been shut down at 2,107 feet.

Ontario Drilling

In the Dawn Field, Lambton County, Ontario, Union Natural Gas Co.'s No. 59, J. A. McLaughlin farm, NW, Lot 24, Concession 2, Dawn Township, has been brought in between 1,600 and 1,700 feet with an open flow in the neighborhood of 10,000,000 feet.

In the Oil Springs Field, Lambton County, a test drilled by Sarnia Oil & Gas Co. on the A. W. Parks property east of Oil Springs village, got some gas at around 1,900 feet. The well was shot by Ernest Jackson at Sarnia Township with 1,000 pounds of dynamite, somewhat increasing the production to a little under 1,000,000 feet.

On the Six Nations Indian Reserve in Brant County, Ajax Oil & Gas Co.'s No. 19 has been finished as a small gasser.

Northern Ontario Show

On the Goulais Bay shore of Lake Superior, near Sault Ste. Marie, Edward Jackson and William Lynch, prospecting for Richard J. Lowenthal and associates of Chicago, are reported to have located a natural gas seepage in Sections 3 and 4, Pennefather Township.

LARGE GAS SYSTEM IS NEARLY COMPLETED

(Continued from Page 17)

pulled back and forth across the river, scooping out a channel for the pipe as it was dipped into the bed of the river.

While through the more swampy sections there may be considerable settling of the pipe before a permanent bottom can be found, this has been taken care of by providing sufficient wrinkle expansion joints which will take up expected stresses.

Remaining gaps in the line, places which could not be completed when contractors were working in those sections, will be completed as quickly as possible by crews of the Texas Construction Co. through arrangements with contractors. As it was, the contractors were forced to do some moving around to take advantage of as many favorable conditions as possible. This was true particularly in the rice growing districts, to which crews had to be moved back and forth to in order to finish that work before various flooding periods.

Tunnelling under two roads and a canal near Jeanerette, La.

Hand operated wrapping machine at work on line.

NORTH AND WEST TEXAS

(Continued from Page 42)

lime 664-71 feet, initial production 60 bbls., total depth 671 feet. I. E. Silkwood's No. 4 Campbell, oil sand 877-81 feet, initial production 7 bbls., total depth 892 feet. The Texas Company and McKanna's No. 3 Jeffery "A," oil sand 721-37 feet, initial production 301 bbls., flowing, total depth 737 feet. The Texas Company and McKanna's No. 6 Jeffery, oil sand 740-56 feet, initial production 188 bbls., flowing, total depth 578 feet.

Willis Terrell's No. 1 Furr, temporarily abandoned. Wooten and Reed's No. 1 McBray, dry and abandoned, total depth 705 feet. Cox and Henderson Oil Co.'s No. 1 Daws, dry and abandoned, total depth 800 feet. Stauffer and Moore's No. 1 Johnson, temporarily abandoned, total depth 300 feet.

Wichita County

W. R. Fullerton's (G. H. Howell), No. 1 Allen and Foster, oil sand 892-96 feet, initial production 2 bbls., plugged and abandoned, total depth 896 feet. W. R. Fullerton's (G. H. Howell), No. 5 Allen and Foster, dry and abandoned, total depth 914 feet. W. R. Fullerton's (G. H. Howell), No. 6 Allen and Foster, oil sand 403-07 feet, and 865-73 feet, initial production 12 bbls., total depth 884 feet.

Wilbarger County

George W. Shaner and others' No. 1 Waggoner, dry and abandoned, total depth 1,935 feet.

COMPLETIONS IN PANHANDLE DISTRICT

Gray County

Saunders and Shell Petroleum Corp.'s No. 1 Wright, show oil 2,659-66 and 2,750-33 feet,, gas at 2,695 feet, increase at 2,725-30 feet, hole full oil at 2,784-88 feet, swabbed 204 bbls. first 24 hours and 191 bbls. second 24 hours.

Moore County

The Texas Company's No. 1 Jester, top pay 2,615-2,960 feet, initial production 12,000,000 feet of gas, total depth 2,996 feet.

COMPLETIONS IN RANGER DISTRICT

Brown County

Farrish and others' No. 1 Fields, temporarily abandoned, total depth 780 feet. Mystel and others' No. 2 Guyer, temporarily abandoned, total depth 1,106 feet.

Coleman County

Arcadia Refining Co. and others' No. 10 Golson, oil sand 1,617-30 feet, initial production 100 bbls. flowing, total depth 1,630 feet. Brookins and others' No. 1 Harris, Audas and others, temporarily abandoned, location. F. A. Lane's No. 1 Kellar, dry and abandoned, total depth 1,583 feet. Anzac Oil Corp. and others' No. 1 Martin, temporarily abandoned, total depth 1,575 feet.

Erath County

Channel and others' No. 1 Wylie, total depth 1,425 feet, dry and abandoned.

Eastland County

Cooper and others' No. 1 Cooper, dry and abandoned, total depth 900 feet. Southern Oil & Production Co. and others' No. 1 Gamblin, Lake sand 3,385-3,405 feet, initial production 12 bbls., oil sand 134,000 feet of gas, total depth 3,505 feet.

Palo Pinto County

Brazos River Gas Co.'s No. 18 Edmondson, dry and abandoned, total depth 1,133 feet.

Taylor County

Adams, Ferguson and Hobbs' No. 3-A Lowe, gas sand 2,305-12 feet, 500,000 feet of gas, gas sand 2,340-50 feet, 1,000,000 feet of gas, initial production 1,500,000 feet of gas, and 900 pounds rock pressure, total depth 1,918 feet. J. B. Jameson's No. 1 Webb heirs, dry and abandoned, total depth 6,396 feet. Sanger and others' No. 1 City of Abilene, temporarily abandoned, total depth 2,785 feet.

Shackelford County

Corzelius Brothers and Terry's No. 1 Flippen, dry and abandoned, total depth 960 feet. A. A. Hutton's No. 1 Isabelle, oil sand 670-83 feet, shot 70 quarts 670-83 feet, initial production 20 bbls., total depth 683 feet.

NORTH TEXAS PRODUCTION
Week Ending June 6, 1931

Panhandle district—	Bbls.
Carson County	5,024
Gray County	44,810
Hutchinson County	9,199
Moore County	707
Wheeler County	306
Total production this week	60,046
Total production last week	61,749
Decrease	1,703
Wichita Falls district—	
Archer County	10,561
Baylor County	462
Clay County	601
Cooke County	1,764
Foard County	51
Jack County	2,118
Haskell County	26
Montague County	3,395
Throckmorton County	315
Wilbarger County	9,664
Wichita County	18,687
Young County	12,142
Total production this week	59,786
Total production last week	60,952
Decrease	1,166
Ranger district—	
Brown County	3,477
Callahan County	2,544
Coleman County	1,412
Comanche County	721
Palo Pinto County	321
Eastland County	3,061
Shackelford County	3,724
Stephens County	4,362
Total production this week	19,622
Total production last week	19,751
Decrease	129

CONVERSION TABLES

A booklet containing conversion tables of kilos to pounds and pounds to kilos has been prepared by the Cunard Steam Ship Co., Ltd., and may be had free by sending request to C. W. Kenick, general freight manager, 25 Broadway, New York City.

EAST CENTRAL TEXAS WILDCATS

(Continued from Page 41)

DELTA COUNTY

Delta Development Co.'s No. 2 Mallie Ablowich, 300 ft. S of No. 1 Cooper, Townsite Sur. ..... Shut down 3,112 ft.

D. S. Hood's No. 1 J. J. Balser, 185 ft. from S and 580 ft. W of Balser 40-ac. tract in SE cor. T. B. Laddin Sur. ..... Drlg. 1,560 ft.

Worthington and Stedman's No. 1 W. H. Dejehett, 150 ft. from S and 776 ft. from W of 52-ac. tract, E. Chick Sur. ..... Shut down 1,927 ft.

ELLIS COUNTY

E. M. Roger's No. 1 John Lee Winn, 1,650 ft. from E and 510 ft. from S of Orland ..... Shut down 1,360 ft.; drill stem in hole.

FRANKLIN COUNTY

George L. Pace and L. B. Pruitt's No. 1 C. E. Cowan, 150 ft. out of NE cor. of 92-ac. tract and survey, Lipscomb Sur. ..... Drlg. 2,000 ft.

FREESTONE COUNTY

Raley and Clark's No. 1 McLancaster (Lampier), 150 ft. from E of W line and center of N and S line, B. Avant Sur. ..... Moving in rig.

E. L. Smith's No. 1 Emily Jackson, center of N 150-ac. of 300-ac. Emily Jackson tract ..... Drlg. 2,700 ft.

GREGG COUNTY

O. O. Alford et al's No. 1 L. M. Colburn, 208 ft. from N and 392 ft. from E of 39.7-ac. tract, Henry Hobson Sur. ..... Rig up.

Arkansas Fuel Oil Co.'s No. 1 Allison et al, 300 ft. from N and 250 ft. from W of tract and survey, William Robinson Sur. ..... Top sand; preparing to test; T. D. 3,594 ft.

Arkansas Drlg. Co.'s No. 1 S. Dodson, 150 ft. from E and 150 ft. from S of lease and survey, Allen Norris Sur. ..... Building derrick.

Atlantic Prod. Co.'s No. 1 J. J. Fuller, 394 ft. from E and 343 ft. from S of 50-ac. tract and lease, Mowmery Irwin Sur. ..... Derrick.

Armstrong and Pitts' No. 1 Walker, 940 ft. from N and 1,970 ft. from E of survey, Martha Dillard Sur. ..... Derrick.

P. P. Ash et al's No. 1 A. H. Tubbs, 1,550 ft. from S and 4,130 ft. from E of survey, Dolores Sanches Sur. ..... Derrick.

Badgett and Ward's No. 1 Sample, 655 ft. S and 185 ft. W of SW cor. of A. Z. Jeffrey 29.5 acres, W. P. Chisum Sur. ..... Shut down 1,000 ft.

M. T. Beeler's No. 1 Finley and Thomas, 150 ft. from N and 150 ft. from W of 10-ac. lease, C. H. Alexander Sur. ..... Building derrick.

Branson et al's No. 1 J. J. Fuller, 1,050 ft. from N and 170 ft. from W of survey, M. Alexander Sur. .. Derrick.

C. A. Bryan's No. 1 C. Vernon, 1,240 ft. from E and 151 ft. N of SW cor. of C. Vernon 58.75-ac. tract, W. W. Avery Sur. ..... Derrick.

Bell & Graddy's No. 1 M. George (or Daniels), 225 ft. S and 650 ft. W of 26-ac. tract, Mary Van Winkle Sur. ..... Drlg. 2,930 ft.

B. L. Brookin's No. 1 J. M. Tuttle, 150 ft. from N and 205 ft. from E of 12½-ac. lease, William H. Castleberry Sur. ... Rig up.
Callahan, Thompson et al's No. 1 Fenn, 463 ft. from N and 150 ft. from E, 778 ft. from S of 44.5-ac. tract, David Ferguson Sur. ... Shut down 2,500 ft.
Cherokee-Chief Oil Co.'s No. 1 Todd, 230 ft. from N and 450 ft. from E of survey, Martha Dillard Sur. ... Drlg. 2,670 ft.
Columbia Oil & Gas Co.'s No. 1-A Harley, 650 ft. E and 300 ft. S of SE cor. of Laura Walker 45-ac. tract, William Robinson Sur. ... Derrick.
Continental Oil Co.'s No. 1 J. J. Fiewellen, 359 ft. from N and 949 ft. from E of 200-ac. lease, Marshall Mann Sur. ... Location.
Cranfill & Reynolds' No. 1 A. D. Porter, 330 ft. from E and 330 ft. from S of 100-ac. tract, G. W. Hooper Sur. ... Fishing 2,762 ft.
Cranfill & Reynolds' No. 1 Mellie Fenn, 210 ft. from E and 500 ft. from S of 28-ac. tract, Haden Edwards Sur. ... Drlg. 1,318 ft.
Tom David et al's No. 1 W. S. Pryor, 200 ft. from S and 200 ft. from W of 152-ac. tract, 2,600 ft. from E and 2,350 ft. from N of survey, Hamilton McNutt Sur. ... Derrick.
Davis and Russell's No. 1 M. E. Anderson, 150 ft. from E and 75 ft. from S of 3-ac. lease in Kilgore Townsite, Mary Van Winkle Sur. ... Shut down 3,558 ft.
Doss and Jones' No. 1 Ella Hegler, 400 ft. from N and 500 ft. from W of survey, J. S. Carrithers Sur. ... Drlg. 3,481 ft.
Charles Davidson et al's No. 1 Paul Jones, 7,000 ft. from most southerly N line and 3,600 ft. from W, W. P. Chisum Sur. ... Coring 2,940 ft.
Daisy Oil Co.'s No. 1 Mrs. H. B. Ware, 1,000 varas from N and 350 ft. from W of survey, Avery B. Johnson Sur. ... Drlg. 3,250 ft.
Deep Rock Oil Co.'s No. 1 A. B. Guy, 340 ft. from E and 250 ft. from S of 50-ac. tract and lease, G. W. Hooper Sur. ... Location.
Duffey-Davis and McGrede's No. 1, 1,310 ft. from N and 3,160 ft. from E of survey, Martha Dillard Sur. ... Derrick.
Sultan & Daniels et al's No. 1 B. Duncan, 430 ft. from N and 514 ft. from E of 28-ac. tract, G. F. Penn Sur. ... Top sand 3,621 ft.; T. D. 3,636 ft.
Harry Elliott et al's No. 1 Woodley Jones, 2,125 ft. from N line and 3,720 ft. from E line of William H. Castleberry Sur. ... Sand 3,531-42 ft.
Harry Elliott's No. 1 McNeely, 150 ft. from N and 150 ft. from E of 7.73-ac. tract, W. P. Chisum Sur. ... Set 6⅝-in. csg. 3,627 ft.
Eastland Oil & Gas Co.'s No. 1 B. B. Sparks, 150 ft. from N and 150 ft. from W of E 50 acres of 100-ac. tract, Harvey R. Kirk Sur. ... Derrick.
Empire Oil & Refining Co.'s No. 1 Otto Lockhart, 150 ft. from E and 150 ft. from S of 75-ac. lease, F. W. Warraner Sur. ... Drlg. 800 ft.
Gulf Production Co.'s No. 1 W. T. Goyne, 330 ft. from E and 330 ft. from S of lease, J. T. McDaniels Sur. ... Drlg. 2,500 ft.
Greer's No. 1 L. M. Coburn, 150 ft. from E and 150 ft. from S of 45-ac. lease, 5,700 ft. from E and 850 ft. from N of survey, Henry Hathaway Sur. ... Derrick.
Harper Petroleum Corp.'s No. 1 Woodley Jones, 2,000 ft. from N line and 3,900 ft. from E line of William H. Castleberry Sur. ... Derrick.
Howard and Russell's No. 1 Stone, 150 ft. from N and 150 ft. from E of 100-ac. tract, Bailey Anderson Sur. ... Derrick.
Houston Oil Co.'s No. 1 E. W. Clements, 200 ft. from E and 200 ft. from S of 18-ac. tract, George A. Thomason Sur. ... Spudding.
Hoop Oil Co.'s No. 1 S. B. Hall, 150 ft. from E and 150 ft. from S of lease and survey, David Dainwood Sur. ... Drlg. 3,275 ft.
Humble Oil & Refining Co.'s No. 1 A. L. Hughes, 108 ft. from N and 126 ft. from W of most northern NW cor. lease and tract, George Hampton Sur. ... Drlg. 680 ft.
Humble Oil & Ref. Co.'s No. 1 H. M. Lawrence, 540 ft. from N and 219 ft. from W of 100-ac. tract, David Ferguson Sur. ... Moving in material.
Hurlburt and Brown's No. 1 L. L. Mackey, 990 ft. from E and 990 ft. from S of 369-ac. tract, 1,000 ft. from W and 990 ft. from S of survey, G. Y. Chambers Sur. ... Drlg. 1,800 ft.
Iowa-Fayne's No. 1 W. B. Walker, 375 ft. from S and 550 ft. from W of survey, E. R. Grisham Sur. ... Drlg. 2,660 ft.
W. A. Jones' No. 1 G. Davis, 4,575 ft. from most easterly E line and 850 ft. from most northerly S line of lease, W. P. Chisum Sur. ... Drlg. 3,100 ft.
K. B. Oil Co.'s No. 1 Dickson, 150 ft. from S and 150 ft. from W of 5-ac. lease, Mary Van Winkle Sur. ... Derrick.
H. P. Key's No. 1 King, 150 ft. out of SE cor. of 48-ac. tract, W. P. Chisum Sur. ... T. D. 3,574 ft.; waiting on csg.
Kimsey-Trimble's No. 1 Griffith Davis, 932 ft. E of N line of Griffith Davis 119.5-ac. tract from NW cor. of same and 145 ft. S at right angles, W. P. Chisum Sur. ... Fishing 3,050 ft.
Kingwood Oil Co.'s No. 1 Godfrey, 1,900 ft. from W line and 6,500 ft. from N line of survey, Mary Van Winkle Sur. ... Drlg. 3,200 ft.
Charles Love et al's No. 1 J. B. Doby, 150 ft. from E and 150 ft. from S of S 6 acres of W 42 acres of 170-ac. tract, W. H. Castleberry Sur. ... Derrick.
Lion Oil & Refining Co.'s No. 1 C. D. Evans, 254 ft. from N and 254 ft. from S, 250 ft. from W of 16-ac. lease, Pleasant McAnally Sur. ... Moving in.
Lacey et al's No. 1 T. D. Anderson et al, 150 ft. from S and 150 ft. from W of 13-ac. tract, G. W. Hooper Sur. ... Running liner; T. D. 3,648 ft.
J. K. Livingston Oil Co.'s No. 1 D. C. Johnson, 200 ft. from N and 150 ft. from E of survey, Martha Dillard Sur. ... Derrick.
Magnolia Petroleum Co.'s No. 1 Jessie King, 7,000 ft. from most southern N line and 3,300 ft. from W, W. P. Chisum Sur. ... Top sand 3,684 ft.; T. D. 3,686 ft.
Magnolia Petroleum Co.'s No. 1 R. L. Salter, 150 ft. from S and 150 ft. from W of 25-ac. tract, H. Edwards Sur. ... Rig up.
Magnolia Petroleum Co.'s No. 1 W. B. Goyne, 150 ft. from S and 150 ft. from W of 31.7-ac. tract, J. T. McDaniel Sur. ... Drlg. 2,400 ft.
Meek and King's No. 1 Harmony Grove School, 270 ft. from S and 150 ft. from W of 3.7-ac. tract, Mowry Irwin Sur. ... Drlg. 3,675 ft.
Mid-Kansas Oil & Gas Co.'s No. 2 Barton, 685 ft. S along W line and Hollingsworth survey, from NE cor. W. P. Chisum Sur., thence 150 ft. at right angles, S. P. Hollingsworth Sur. ... Pecan Gap 2,630-3,035 ft.; run 7-in. csg. 3,620 ft.
Mid-Kansas Oil & Gas Co.'s No. 1 Hughey, 150 ft. from N and 150 ft. from W of tract and survey, James Hillard Sur. ... Set 6⅝-in. csg.; T. D. 3,485 ft.
Mid-Kansas Oil & Gas Co.'s No. 1 J. E. Choice, 2,100 ft. S and 500 ft. E of most easterly NW cor. of survey, W. P. Chisum Sur. ... Drlg. 3,598 ft.
Overlees et al's No. 1 Mollie Fenn, 108 ft. from N and 126 ft. from W of survey, George Hampton Sur. ... Derrick.
George L. Pace et al's No. 1 W. D. Anderson, 150 ft. from N and 150 ft. from W of 13¾-ac. tract, G. W. Hooper Sur. ... Rig up.
Prairie Oil & Gas Co.'s No. 1 Isley, 536 ft. from N and 150 ft. from E of 100-ac. tract and lease, George R. Rains Sur. ... Waiting on csg.
Prince and Prince's No. 1 J. Worr, 630 ft. from W of NW cor. of George Hampton Sur., Haden Edwards Sur. ... Moving in.
J. O. Ferrin's No. 1 W. A. Burknight, 2,035 ft. from E and 350 ft. from S of survey, H. Edwards Sur. ... Spudding.
Petroleum Finance Corp.'s No. 1 Lacy, 300 ft. from E and 318 ft. from S of survey, Grisham Sur. ... Drlg. 875 ft.
Roeser and Pendleton's No. 1 Arthur Christian, 105 ft. from S and 308 ft. from W of 31-ac. lease, H. Hathaway Sur. ... Shut down 2,865 ft.
Ross et al's No. 1, located on Findley & Thomas 50-ac. tract, 150 ft. from S line of 6.66-ac. lease, C. H. Alexander Sur. ... Derrick.
C. Rosenfield et al's No. 1 J. A. Knowles, 700 ft. from E, 1,250 ft. from N, William Lyles Sur. ... Drlg. 3,550 ft.
Sabine Oil & Gas Co.'s No. 1 Harris, 3,500 ft. E and 3,500 ft. N of NE cor. of S. Lewis Sur., Mary Van Winkle Sur. ... Rig up.
Seigler and McCall's No. 1 Missie Young, 330 ft. from N and 330 ft. from W of tract and survey, Carl Rhodes Sur. ... Drlg. 1,016 ft.
Shell Petroleum Corp.'s No. 1 G. W. Richey, 150 ft. from E and 150 ft. from S of 40-ac. tract, William Carlton Sur. ... Top sand 3,574-81 ft.; T. D. 3,625 ft.
Shell Petroleum Corp.'s No. 1 E. W. Willoughby, 3,725 ft. from W line and 5,400 ft. from S line of survey, Mary Van Winkle Sur. ... Top sand 3,540 ft.; T. D. 3,548 ft.
Shubert Drlg. Co.'s No. 1 Smith, 1,400 ft. from N and 2,800 ft. from E of survey ... Drlg. 2,495 ft.
Smith et al's No. 1 J. B. Doby, 982 ft. from E and 150 ft. from S of 170-ac. tract, William H. Castleberry Sur. ... Oil sand 3,491-99 ft.; shut down for csg.
E. L. Smith's No. 1 Cole, 893 varas S along E line of Samuel Brooks Sur. from NE cor. of same, thence 107 varas E at right angles, J. Meador Sur. ... Moving in.
Sinclair Oil & Gas Co.'s No. 1 M. T. Cole, 2,640 ft. from N and 2,742.2 ft. from W line of survey, Samuel Brooks Sur. ... Top sand 3,546 ft.; running tubing; T. D. 3,555 ft.
Smith Ref. Co.'s No. 1 J. A. Knowles, 150 ft. from S, 150 ft. from NW of 75-ac. tract, 5,200 ft. from W, 7,700 ft. from N, Mary Van Winkle Sur. ... Drlg. 2,580 ft.
Stanclind Oil & Gas Co.'s No. 1 J. E. Wilhite, 330 ft. from N and 150 ft. from W of tract and lease, G. W. Hooper Sur. ... Rig up.
Sun Oil Co.'s No. 2 G. W. Tate, 250 ft. from N and 360 ft. from W of 64-ac. tract, W. H. Castleberry Sur. ... Moving in.
Sun Oil Co.'s No. 1 J. T. Loden, 150 ft. from S and 160 ft. from W of 100-ac. tract, Dolores Sanches Sur. ... Rig up.
Sun Oil Co.'s No. 1 Pentecost, 150 ft. from S and 150 ft. from W of lease, Mary Scott Sur. ... Material on ground.
Sun Oil Co.'s No. 1 G. W. Tate, 250 ft. from N and 250 ft. from E of 64-ac. lease and tract, William H. Castleberry Sur. ... Oil sand 3,506-11 ft.; running csg.
C. S. Thomas et al's No. 1 C. B. Everett, 300 ft. from N and 200 ft. from E of 30.25-ac. tract, John Ruddle Sur. ... Drlg. 2,580 ft.
The Texas Company's No. 1 W. Baxter, 150 ft. from E and 150 ft. from S of lease, Mary Scott Sur. ... Set 7-in. csg. 3,611 ft.
The Texas Company's No. 1 M. T. Cole, 3,400 ft. N and 1,325 ft. E of NE cor. of Samuel Brooks Sur., in the E. L. Walker Sur. ... Base Pecan Gap 2,955 ft.; drlg 3,514 ft.
The Texas Company's No. 1 J. B. Bales, 330 ft. from S and 150 ft. from W of 30-ac. tract, William Carlton Sur. ... Drlg. 912 ft.
Turner et al's No. 1 Raden Edwards, 150 ft. from N and 150 ft. from W of tract and lease, Hade Edwards Sur. ... Set 10-in. csg. 76 ft.
Valentine Oil Co.'s No. 1 Goyne-Hughey, 6,100 ft. from S and 6,800 ft. from W of survey, Mary Van Winkle Sur. ... Derrick.
Walker and Harrison's No. 1 E. L. Walker, 1,025 ft. from N and 550 ft. from W of survey, Martha Dillard Sur. ... Swabbing; T. D. 3,590 ft.
Wise and Jackson's No. 1 F. J. Glover, 350 ft. from N and 125 ft. from E line of survey, George Melton Sur. ... Rig up.
H. M. Wages et al's No. 1 Finley and Thomas, 165 ft. from E and 150 ft. from S of 10-ac. lease, Charles H. Alexander Sur. ... Shut down 2,721 ft.
Woodley Petroleum Co.'s No. 1 Dyers, 200 ft. from S and 200 ft. from W of 640-ac. lease, H. Hathaway Sur. ... Derrick.
Yount Lee Oil Co.'s No. 1 Thrasher and Stuckey, 309 ft. from N line and 331 ft. from E line of 80-ac. lease, G. W. Hooper Sur. ... Shut down 3,121 ft.
Ziegler Oil Co.'s No. 1 L. D. Campbell, 540 ft. from N and 219 ft. from E of 72½-ac. tract, David Ferguson Sur. ... Derrick.

HENDERSON COUNTY

Arcadia Refining Co.'s No. 1 J. M. Dean, 150 ft. from S and 150 ft. from W of 42.75-ac. tract, Simon Boone heirs Sur. ... Top Woodbine sand 3,893 ft.; top Pecan Gap 2,423 ft.; base 2,629 ft.
Westside Investment Co.'s No. 1 Thornhill, 450 varas from W and 400 varas from N line of survey, James Spivey heirs Sur. ... Drlg. 1,900 ft.

HOPKINS COUNTY

Abers, Alsup and Bolling's No. 1 McKay, Blk. 45, Hayden Arnold Sur. in SW cor. ... Rig up to deepen.

LAMAR COUNTY

K. O. Bundy et al's No. 1 La Gatie, 200 ft. from N and 500 ft from E of La Gatie tract, John V. Cherry Sur. ... Moving in rig.
Doyle & Jondreau's No. 1 Guest, 250 ft. S and 2,046 ft. E of 100-ac. tract, L. Roberts Sur. ... T. D. 2,700 ft.; cored sand 2,694-2,700 ft.
Puritan's No. 1 George Parr, 2,000 ft. from W of Frisco Railway and 1,800 ft. from E line of R. Russell Sur. ... Ready to spud.

LIMESTONE COUNTY

George McCamey's No. 1 B. K. Arnett, center of Blk. 13 in Casson Townsite ... Shut down 1,720 ft.

MORRIS COUNTY

Dumas et al's No. 1 Tom Ball, 1,046 ft. from E and 248 ft. from S of 71-ac. tract, A. S. Young heirs Sur. ... Derrick.

NACOGDOCHES COUNTY

Benedum & Trees' No. 1 Conkwright, 150 ft. from N in center of E and W lines of A. H. Conkwright 100-ac. tract, J. A. Cherino Sur. ... Drlg. 4,138 ft. in chalk.
Buate et al's No. 1 A. F. Boatman, 330 ft. from S and 150 ft. from W of 67-ac. tract, William A. Moore Sur. ... Shut down 1,605 ft.
Burke et al's No. 1 F. R. Patterson, 6,515 varas from W and 315 varas from W line of Patterson 70-ac. tract, Joseph Las Santos Chay Sur. ... Shut down 4,270 ft.

E. L. Chapman's No. 1 Tillford Hunt, 1,250 varas from S line and 1,468 varas from W line of survey, Stephen Strode Sur. ..... Reaming 3,812 ft.
Churchill-Armstrong's No. 1 Max W. Hart, 2,640 ft. from N line and 2,640 ft. from S of N line of survey, George Pollett Sur. ..... Derrick.
Foreman and Weller's No. 1 Norris, 60 ft. NW of E line and 420 ft. S of road in 73.5-ac. tract, Hossea Y. Barbo Sur. ..... Shut down.
Fuhram et al's No. 1 Robert Mattaner, NW cor. of 520-ac. tract, J. A. Cherino grant ..... Rig up.
Harwell and Scott's No. 1 R. I. Driver, 1,500 ft. from SE cor. of P. B. Ballard 126-ac. tract, 15 miles SE of Nacogdoches in Patricia De Torres Sur. ..... Coring 1,850 ft.
Joiner and Henson's No. 1 Andy Legg, 330 ft. from N and 330 ft. from W of tract, John Durst Sur. ..... Drlg. 3,200 ft.
Joiner et al's No. 1 Reeves, 450 ft. from S and 350 ft. from W of survey, T. G. Loyd Sur. ..... Drlg. 3,865 ft.
Morgan Oil Corp.'s No. 1 R. E. Burt, center of J. I. Reed 20-ac. tract, Jose Luy De La Bega Sur. ..... Location.
M. A. Vaughn's No. 1 Dixon Greer, in the M. G. Herrera Sur. ..... Derrick.
Paul Vitek et al's No. 1 Hayter estate, 1,000 ft. E of Lacc Creek and 300 ft. S of Nacogdoches and Jacksonville Highway De Las Santos-Coy Sur. ..... Shut down 3,000 ft.
W. W. Wheeler's No. 1 I. D. Parmley, about 155 varas N of S line and about center of E line of survey, John Kirby Sur. ..... Drlg. 3,371 ft.
Sequia's No. 1 Vanover, 6,072 ft. from N and 6,636 ft. from E of Alford Oliver Sur., E. Boyd E 100-ac. tract ..... Digging pit.
Upland Oil Co.'s No. 1 E. M. Cooper, 300 ft. from N line and 300 ft. from E line of tract, James Windsor Sur. ..... Drlg. 3,880 ft.
Big Indian Oil Co.'s No. 1 J. N. Stewart, center of 79-ac. tract in the Jose Ignacio Ybarba Sur. ..... Location.

RAINS COUNTY

Berry and Hale's No. 1 Owensby, 150 ft. N and 1,100 ft. from E of most easterly SE cor. of survey, Alexander Sur. ..... Shut down 2,096 ft.

RED RIVER COUNTY

J. R. Sarland's No. 1 Bryan, 1,200 ft. SW of NE cor. of Bryan 130 acres, P. Vaughn Sur. ..... Derrick up.
Harris & Joiner's No. 1 E. Howison, 225 ft. S, 185 ft. W of 79-ac. tract, William Humphreys Sur. ..... Shut down 2,216 ft.
Pearsons et al's No. 1 J. R. Dellahunty, 500 ft. from N of Isaac Moore Sur. and 200 ft. E of E line of Robert Glass Sur. ..... Shut down 560 ft.

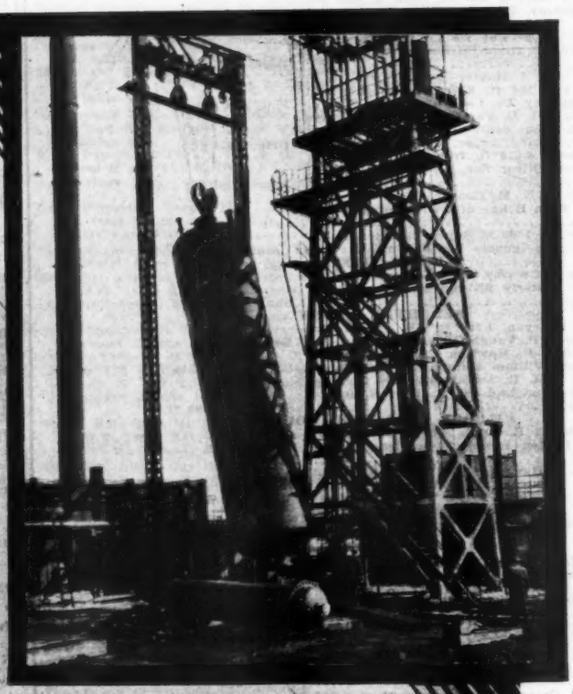
KILGORE AREA—RUSK COUNTY

Burton Drlg. Co.'s No. 3 E. B. S. Florey, 350 ft. out of NE cor. of Burton Florey 50-ac. lease, Peter Holmes Sur. ..... Location.
Calloway et al's No. 1 Harmon, 1,800 ft. from E and 6,525 ft. from N of survey, F. Cordova Sur. ..... Base Austin 3,662 ft.; sand 3,737-48 ft.; set csg. 3,729 ft.
E. L. Chapman's No. 1 Oren Russell, 500 ft. W and 150 ft. S of most easterly NE cor. of Russell 30-ac. tract J. English Sur. ..... Drlg. 2,945 ft.; top Pecan Gap 2,-618 ft.
Cox and Hamon's No. 3 D. M. Peterson, 150 ft. from N and W lines of 40-ac. tract, Isaac Ruddle Sur. ..... Moving in material.
Crider and Manly's No. 1 R. A. Motley, 600 ft. from S and 1,150 ft. from W of J. T. McDaniels Sur. ..... Derrick.
E. L. Chapman's No. 1 Jesse Minschew, 528 ft. from E and 1,800 ft. from S of survey, Henry B. Dance Sur. ..... Location.
East Texas Refining Co.'s No. 1 Clara Webb, 150 ft. from N and 150 ft. from E of 15-ac. tract, Thomas Grace Sur. ..... Drlg. 2,380 ft.
Harry Elliott's No. 1 Carroll, 175 ft. from N and 200 ft. from E of 7-ac. tract, W. R. Cook Sur. ..... Location.
Elsy Drlg. Co.'s No. 1 George Thompson, 150 ft. from N, 150 ft. from E of tract of 70 acres and 10-ac. lease, 400 ft. S, 500 ft. W, Henry Dobson Sur. ..... Top sand 3,671 ft.; testing; T. D. 3,718 ft.
Gulf Production Co.'s No. 2 Jernigan, 330 ft. from E and 330 ft. from S of lease, W. W. Simms Sur. ..... Drlg. 2,697 ft.
Houston Production Co.'s No. 1 S. S. Laird, 200 ft. from N and 150 ft. from W of survey, J. McKim Sur. ..... Drlg. 2,697 ft.
Humble Oil & Refining Co.'s No. 1 Barksdale, 150 ft. from N and 180 ft. from W of 76.5-ac. tract, S. P. Hollingsworth Sur. ..... Building derrick.
Humble Oil & Refining Co.'s No. 1 May Day Caldwell, 2,110 ft. from N and 1,100 ft. from W of survey, T. J. Martin Sur. ..... Building derrick.
Humble Oil & Refining Co.'s No. 1 First Guarantee Bank of Overton, 330 ft. from S and 330 ft. from W of 80-ac. tract and survey ..... Drlg. 1,160 ft.
Humble Oil & Refining Co.'s No. 1 DeGuerin, 450 ft. from N and 300 ft. from E of 121.8-ac. tract, T. J. Martin Sur. ..... Derrick.
Kirby Petroleum Co.'s No. 1 Jeff Reddie, 150 ft. from N and 150 ft. from W of 97.5-ac. tract, Thomas Grace Sur. ..... T. D. 3,660 ft.; top sand 3,642 ft.
Lewis & Selby Oil & Gas Co.'s No. 2 Peques, 150 ft. from S and 150 ft. from W of S 15-ac. tract, G. Cooper Sur. ..... Drlg. 2,670 ft.
Lyle and Orr's No. 1 Powers, 2,200 ft. from N and 360 ft. from E of survey, J. Womack Sur. ..... Rig up.
C. H. Lyon's No. 1 Ladd, 177 ft. from N and 177 ft. from W of 2-ac. tract, Henry Hobson Sur. ..... Drlg. 3,360 ft.
Magnolia Petroleum Co.'s No. 1 Florey, 150 ft. from N and E lines of tract, Peter Holmes Sur. ..... T. D. 3,668 ft.; plugged back to 3,647 ft.
Ray Martin's No. 1 Russell, 190 ft. from N and 5,050 ft. from W of survey, T. J. Martin Sur. ..... Drlg. 600 ft.
Moser's No. 1 Buntyn, 554 ft. from N and 325 ft. from E of survey, the most northeasterly cor. of survey, J. C. Snow Sur. ..... Spudded; shut down.
Navarro Oil Co.'s No. 1 Hindman, 250 ft. from S and 330 ft. from W of 11-ac. lease, W. W. Simms Sur. ..... Location.
J. J. O'Heorn's No. 1 Mary Moore McMillan, 2,110 ft. from N and 600 ft. from W of survey, T. J. Martin Sur. ..... Rig up.
Mrs. Joyce Richardson, 150 ft. from N and 150 ft. from W of 10-ac. tract, Robert W. Smith Sur. ..... Derrick.
Rector and Davis' No. 1 Brightwell, 3,300 ft. from S line and 225 ft. from W line of survey, Robert E. Winn Sur. ..... Top sand 3,664 ft.; T. D. 3,708 ft.
Stanolind Oil & Gas Co.'s No. 1 O'Quinn, 3,050 ft. from W and 1,900 ft. from S of survey, George Berry Sur. ..... Drlg. 285 ft.
Stroube and Black's No. 1 W. M. Jernigan, 150 ft. from S and 150 ft. from W of lease, J. C. Snow Sur. ..... Set 10-in. csg. 110 ft.
Stanolind Oil & Gas Co.'s No. 1 Beal, 900 ft. from the S and W lines of the lease, W. P. Chisum Sur. ..... Derrick.

JOINER POOL—RUSK COUNTY

Alford et al's No. 1 W. L. Thrash, 1,103 ft. from N, 430 ft. from E of SE cor., B. Smith Sur. ..... Derrick.
Armstrong and Pitt's No. 1 Cooper, 2,150 ft. from W and 166 ft. from N of survey ..... Drlg. 2,890 ft.
Big Indian Oil Co.'s No. 1 Deason, 360 ft. from E and 4,100 ft. from S of survey, M. J. Prue Sur. ..... Top Austin 3,560 ft.; base Austin 3,609 ft.; set 6⅝-in. csg.; T. D. 3,652 ft.
Armstrong's No. 1 Alford, 151 ft. from S and 1,080 ft. from W of survey, T. J. Moore Sur. ..... Derrick.
Campbell Oil Co.'s No. 1 Compton, 600 ft. from N and W line of Simon Del Rio Sur., 1⅛ miles NW of Minden ..... Derrick.
Cochran and Smith's No. 1 J. P. Cansler, 150 ft. from S and 1,025 ft. from W of 38.5-ac. tract, E. Collard Sur. ..... T. D. 3,780 ft. in sand.
Consolidated Oil Co.'s No. 3 Jobe, 4,500 ft. from W and 3,160 ft. from N of survey, Juan Ximenes Sur. ..... T. D. 3,685 ft.
F. L. Coogan's No. 1 Florence, 4,480 ft. from W and 4,050 ft. from S of survey, F. Cordova Sur. ..... Drlg. 3,015 ft.
Comb's No. 1 Fox, 3,150 ft. from S and 150 ft. from E of survey, D. Carmack Sur. ..... Derrick.
R. H. Deering & Son's No. 1 T. H. Goforth, 150 ft. from S and 150 ft. from W of 22-ac. lease and 62-ac. tract, J. Lindly Sur. ..... Set 6-in. csg. at 3,760 ft.; T. D. 3,776 ft.
Droppleman Development Co.'s No. 1 Cox, 384 ft. from N and 330 ft. from W of 20-ac. lease or survey, John Darley Sur. ..... Rig up.
Dan Dillon et al's No. 1 W. H. Frederick (Jake), 150 ft. from E, 150 ft. from S of 50-ac. tract, Juan Ximenes Sur. ..... Derrick.
Danciger's No. 1 Deason, 3,925 ft. from S and 650 ft. from W of survey, Juan Ximenes Sur. ..... Swabbed through tubing; dry.
East Texas Refining Co.'s No. 1 J. Bell, 1,250 ft. from E and 750 ft. from N of survey, S. P. Hollingsworth Sur. ..... Drlg. 2,741 ft.
East Texas Refining Co.'s No. 1 Grissom, 4,500 ft. from W and 5,630 ft. from S of survey, F. Cordova Sur. ..... Set 6-in. csg. 3,690 ft.
Elsy and Tauteaham's No. 1 Deason, 1,300 ft. from W and 3,700 ft. from S of survey, Juan Ximenes Sur. ..... Shut down 2,310 ft.
Elsy Drlg. Co.'s No. 1 Frederick, 150 ft. from S and 603 ft. from W of Frederick 90-ac. tract, Juan Ximenes Sur. ..... Derrick.
Empire Oil & Refining Co.'s No. 1 Leverett, 150 ft. from S and 150 ft. from W of survey, J. C. Snow Sur. ..... Drlg. 3,035 ft.
Great Eastern Oil Co.'s No. 1 Mayfield-Alford, 250 ft. from S and 250 ft. from W of Alford tract, T. J. Moore Sur. ..... Preparing to set csg.; sand 3,669-92 ft.
Griffith's No. 1 J. F. Lowe, 800 varas E of W line and 200 varas S of N line of 268-ac. tract, William Williams Sur. ..... Shut down 3,668 ft.
Gulf Production Co.'s No. 1 L. P. Thrash, 5,300 ft. from E and 5,800 ft. from S of survey, F. Cordova Sur. ..... Rig up.
Humble Oil & Refining Co.'s No. 1 Shaw, 2,350 ft. from W and 5,800 ft. from S of survey, F. Cordova Sur. ..... Derrick.
Humble Oil & Refining Co.'s No. 1 Mattie Wooster, L.-200 ft. from E and 384 ft. from S of survey, W. H. Bears Sur. ..... Preparing to set csg.; T. D. 3,-715 ft.
Humble Oil & Ref. Co.'s No. 1 Plowman, 163 ft. from S and 1,074 ft. E of NW cor. of M. L. Thompson 139.6-ac. tract, F. Cordova Sur. ..... Set 6-in. csg. 3,713 ft.; sand 3,-760 ft.
Humble Oil & Refining Co.'s No. 1 Jones Fuller, 330 ft. from N and 330 ft. from W of 115.66-ac. tract, J. Ellington Sur. ..... Rig up.
Humble Oil & Refining Co.'s No. 1 W. A. Mullikin, 4,200 ft. from S and 6,700 ft. from E of survey, T. J. Martin Sur. ..... Rig up.
Humble Oil & Refining Co.'s No. 1 R. T. Cameron, 3,300 ft. from S and 6,700 ft. from E of survey ..... Rig up.
H. L. Hunt's No. 1 Smith-Wilson, 407 ft. from N and 425 ft. from W of lease, George Berry Sur. ..... Drlg. 685 ft.
Jackson-Wise and Sneden, 215 ft. from E and 175 ft. from S of 40-ac. lease, M. J. Prue Sur. ..... Set 12¼-in. csg. 100 ft.
Albert Jones' No. 1 John Minnifee, 100 ft. from S and 1,000 ft. from W of survey on 70-ac. tract, T. J. Walling Sur. ..... Derrick.
C. C. Julian's No. 1 Motley, 780 ft. from N and 1,673 ft. from W of survey, J. T. McDaniels Sur. ..... Set csg.; T. D. 191 ft.
Kimbrough et al's No. 1 Weatherby, 300 ft. from N and 300 ft. from E, Robert Martin Sur. ..... Fishing 3,460 ft.
Lee and Young's No. 1 John Whelis, 150 ft. from N and 150 ft. from E of 15.3-ac. tract, F. Cordova Sur. ..... Drlg. 3,605 ft.
Leonard Petroleum Co.'s No. 1 Sanger Bros., 390 ft. from N and 350 ft. from W of survey, J. P. Meredith Sur. ..... Drlg. 2,867 ft.
Magnolia Petroleum Co.'s No. 1 Eaton, 5,700 ft. from E and 1,500 ft. from N of survey, F. Cordova Sur. ..... Drlg. 3,702 ft.; top Pecan Gap 2,-730 ft.; base Pecan Gap 3,132 ft.
Magnolia Petroleum Co.'s No. 2 Moore, 330 ft. S and 448 ft. E of NE cor. of J. Womack Sur., Jesse Ellington Sur. ..... Top sand 3,661 ft.; coring 3,661 ft.
Madden et al's No. 1 Mose Mayfield, 960 ft. from S and 160 ft. from W line of 154-ac. lease, Daniel Clark Sur ..... Rigging up pumping unit.
Mass and Tucker's No. 1 Matthews, 3,244 ft. from N, 4,356 ft. from E, Dalines Cartimas Sur. ..... Drlg. 3,176 ft.
McMurray's No. 1 Sam Stone, 1,700 ft. from N and 6,300 ft. from W of survey ..... Derrick.
Nat Saddler's No. 1 Ed Sparks, 350 ft. from E, 150 ft. from S of survey, L. C. Riggs Sur. ..... Drlg. 1,630 ft.
Overton Refining Co.'s No. 1 Jones, 495 ft. from E and 229 ft. N of NE cor. of G. W. Eaton 74½-ac. tract, F. Cordova Sur. ..... Drlg. 3,032 ft.
Pharis and Sample's No. 1 Deason, 1,555 ft. E and 155 ft. S of SE cor. of H. Brooks tract in M. J. Prue Sur. ..... Shut down 3,619 ft.
Philmack's No. 1 Keeling, 320 ft. from S and 320 ft. from W of 10-ac. lease, F. Cordova Sur. ..... Shut down 3,732-36 ft.; preparing to set csg.
Phillips Petroleum Corp.'s No. 1 L. J. Pinkston, 590 ft. from N and 231 ft. W of lease, M. J. Prue Sur. ..... Drlg. 3,575 ft.
Rowe et al's No. 1 Maxwell, 855 ft. from E and 337 ft. from S of B. F. Maxwell 59-ac. tract, R. H. Pinney Sur. ..... Derrick.
Southern Crude Oil Purchasing Co.'s No. 1 C. Smith, 330 ft. from S line and 150 ft. from E line of lease, William Killen Sur. ..... Top sand 3,758 ft.; set 6⅝-in. csg.
Stokes et al's No. 1 Mrs. M. M. Talley, 4,100 ft. from W and 1,050 ft. from N of survey ..... Moving in rig.
Sun Oil Co.'s No. 1 Horace Schuler, 3,850 ft. from W and 6,110 ft. from N of survey, J. B. De Cadena Sur. ..... Sand 3,641 ft.; run 6-in. csg.
Shell Petroleum Corp.'s No. 1 Able Holt, 150 ft. from N and 150 ft. from W of lease, Daniel Clark Sur. ..... Connecting up; T. D. 3,740 ft.
Sinclair Oil & Gas Co.'s No. 2 W. D. Kinney, 200 ft. from E and 200 ft. from S of lease, J. B. De Cadena Sur. ..... Sand 3,666 ft.; preparing to wash in.
Sinclair Oil & Gas Co.'s No. 1 March, 330 ft. from E and 330 ft. from S of March 441-ac. tract, Leonard Williams Sur. ..... Drlg. 2,910 ft.
Stanley and Winn's No. 1 Young, 150 ft. from E and 6,000 ft. from S of survey, M. J. Prue Sur. ..... Drlg. 2,475 ft.
Strube-Collins-Wheelock's No. 1 F. R. Russell, 425 ft. from E and 250 ft. from S of N 35 acres of 70-ac. Russell tract, T. J. Martin Sur. ..... Set 10-in. csg. 104 ft.
Shaheen and Keeler's No. 1 H. L. Griffin, 550 ft. from W and 2,000 ft. from S of survey, Juan Ximenes Sur. ..... Derrick.
Sun Oil Co.'s No. 1 O. W. Knight, 1,350 ft. from S and 250 ft. from E of survey, D. Collins Sur. ..... Location.
Suttle's No. 2 Holland, 156 ft. from N and 152 ft. from W of Holland 41.7-ac. tract, M. J. Prue Sur. ..... Shut down 1,750 ft.

A REFINER expresses his satisfaction with FLUID-FUSION WELDED VESSELS



L & REFINING COMPAN

ARROWS

REFINERS PRODUCERS AND MARKETERS OF PERFECT PETROLEUM PRODUCTS

LEWISTOWN, MONTANA

Illustration above shows installation of The 10x40 ft. Reaction Chamber—Walls 2 1-2 in. thick—Weight 158,000 lbs.

In enlarging their refinery recently the Arro Oil & Refining Company, Lewistown, Montana, decided to replace some of their cracking equipment. Before purchasing the necessary high pressure chambers they examined many vessels in actual service and investigated the available sources of supply. As a result the new reaction chamber and dephlegmator at the Arro Refinery are P.I.W. FLUID-FUSION welded.

Their satisfaction with this equipment is evidenced by the accompanying letter. Not only is the safety and reliable performance of the vessels indicated but also the dependability of P.I.W. in keeping delivery promises and making them conform to a construction program.

FLUID-FUSION welded cracking chambers and distillation equipment will serve you equally as well.

BRANCH OFFICES:
25 W. 43rd St. New York, N. Y. Atlas Life Bldg. Tulsa, Okla. Petroleum Bldg. Houston, Texas

P.I.W.

THE PETROLEUM IRON WORKS CO. SHARON PA.

Stanolind Oil & Gas Co.'s No. 1 M. E. King, 330 ft. from N and 330 ft. from W of lease, Meredith McCabe Sur. ..... Coring 3,709 ft.; top sand 3,689 ft.
The Texas Company's No. 1 Pinkston, 3,100 ft. from N and 150 ft. from E of survey, J. B. De Cadena Sur. ..... Set 10-in. csg. 239 ft.
Tidal Oil Co.'s No. 1 Joel Shaw, 1,620 ft. from W and 1,900 ft. from S of survey, R. Collard Sur. ..... Drlg. 3,445 ft.
Tidal Oil Co.'s No. 2 Irion, 6,300 ft. from W and 6,500 ft. from N of survey, M. J. Prue Sur. ..... Set 6-in. csg. 3,650 ft.
Tidal Oil Co.'s No. 3 Thompson, 384 ft. from N and 330 ft. from W of tract, John Darley Sur. ..... Set 6-in. csg. 3,610 ft.
Tunstill et al's No. 1 J. Henshaw, 180 ft. from N and 180 ft. from E of 40-ac. tract and lease, Henry B. Dance Sur. ..... Set 12½-in. csg. 98 ft.
West Texas Oil & Royalty Co.'s No. 1 King, 330 ft. from S and 330 ft. from W of survey and 129-ac. tract, John C. Morrison Sur. ..... Coring 3,761 ft.

SMITH COUNTY

Arkansas Drilling Co.'s No. 1 Wallace, 150 ft. from N and 150 ft. from E of 200-ac. tract, W. W. Avery Sur. ..... Drlg. 600 ft.
Bailey Gaunce et al's No. 1 S. S. Cook, 150 ft. from S and 150 ft. from W of S. S. Cook 20-ac. tract in 189-ac. tract, Juan Vargus Sur. ..... Shut down 2,560 ft.
Big Indian Oil Co.'s No. 1 Mills, 1,045 ft. E along S line of C. Mills 67.5-ac. farm, SW cor. of same and 710 ft. N at right angles to S line of 67.7 acres, J. Jordan Sur. ..... Drlg. 3,085 ft.
Big Indian Oil Co.'s No. 1 Holland, 2,384 ft. from N and 1,446 ft. from E line of survey, Thomas Allen Sur. ..... Drlg. 3,770 ft.
J. H. Brogan, trustee's No. 1 T. O. Wright, 500 ft. from N and 300 ft. from E of survey, Juan Vargus Sur. ..... Rig up.
G. E. Bunte, trustee's No. 1 A. S. Jarvis, 150 ft. from S and 150 ft. from W of 267-ac. tract, Juan Vargus Sur. ..... Rig up.
Bunte et al's No. 1 Atkinson, 1,000 ft. from S line and 1,000 ft. from N line of 330-ac. tract, Calloway Dean Sur. ..... Rig up.
Roy I. Carter's No. 1 T. O. Wright, 1,445 ft. from N and 182 ft. from E of survey, Juan Vargus Sur. .... Moving in rig.
Concord Oil Co.'s No. 1 Wolford, 147 ft. from S and 147 ft. from W of Wolford tract, center of 2-ac. lease, James Jordan Sur. ..... Sand 3,715-18 ft.; set csg. 3,714 ft.
Cotton Belt Oil Co.'s No. 1 C. S. Jackson, 500 ft. from N and 500 ft. from W of 39.88-ac. tract, Henry Mickleborough Sur. ..... Derrick.
Deason Oil Co.'s No. 1 T. O. Wright, 1,440 ft. from N and 250 ft. from W of T. O. Wright 86-ac. tract, Juan Vargus Sur. ..... Location.
Deering & Son's No. 1 Wright, 1,815 ft. from N and 150 ft. from E of survey, Juan Vargus Sur. ..... Drlg. 2,250 ft.
Dumas' No. 1 Cooke, 1,558 ft. SE along center line of Highway No. 64 from point where S. S. Cooke 17.6-ac. tract W line intersects highway and 942 ft. at right angles to road, James Jordan Sur. ..... Drlg. 3,713 ft.
East Texas Refining Co.'s No. 1 Colored Methodist Church, James Jordan Sur. ..... Drlg. 1,950 ft.
ft. at right angles to road, James Jordan Sur. .... Rig up.
Hancock and McCarthey's No. 1 J. C. Cross, 200 ft. from E of road and 200 ft. N of S line of survey on a 13-ac. tract, Burbridge Sur. ..... Derrick.
Imperator Oil Co.'s No. 1 L. M. Green, 140 ft. from S and 165 ft. from E line of Green 86.5-ac. tract, NW of Cverton and N and a little E of Big Indian No. 1 Holland ..... Set 10-in. csg. 180 ft.
Joiner et al's No. 1 W. W. Wright, 347.5 varas from E and 647 varas from S of NW Wright 225-ac. tract, Van Sickle Sur. ..... Coring 4,110 ft.
McCarthey and Hancock's No. 1 Nellie Taylor, 250 ft. out of SW cor. of 73-ac. Taylor tract, F. M. Taylor Sur. ..... Derrick.
McMillan's No. 1 Wright, 794 ft. from N and 171 ft. from W of T. C. Wright 86-ac. tract, Juan Vargus Sur. ..... Derrick.
Morrison's No. 1 I. Roy, 330 ft. N and E from SW cor. of 87-ac. tract in Henry Cools Sur. ..... Drlg. 1,345 ft.
Owen and Sloan's No. 1-B Starnes, 5,018 ft. from W and 3,080 ft. from N of Samuel Epps Sur. ..... Coring sand 3,970 ft.
M. M. Rowand et al's No. 1 Gibbons, 1,800 varas from W and 260 varas S of river (which is N line of survey), J. M. Garcia Sur. ..... Shut down 1,805 ft.
Ruffin and Williams' No. 1 Hamp Florence, 700 ft. from N and 200 ft. from E of 192.5-ac. tract, Barnes Clark Sur. ..... Coring 3,965 ft.
Sinclair Oil & Gas Co.'s No. 1 Mayfield, 2,194 ft. from N and 3,625 ft. from W of 276-ac. Mayfield lease, James Jordan Sur. ..... Derrick.
Sun Oil Co.'s No. 1 J. Henson, 600 ft. from E and 6,700 ft. from S of survey, Juan Vargus Sur. ..... Coring 3,684 ft.
Sun Oil Co.'s No. 1 J. J. Denton, 250 ft. from the N and 288 ft. from E lines of 114.3-ac. tract in Juan Vargus Sur. ..... Sand 3,695-3,702 ft.
Winona O. & G. Co.'s No. 1 Freeman, 150 ft. from S. W of 89-ac. tract in A. J. Legrone Sur., 4 miles SE of Winona ..... Shut down 3,681 ft.

TITUS COUNTY

H. V. Cook's No. 1 M. C. Rogers, center of SW of Moore Sur. ..... Moving in rig.

UPSHUR COUNTY

Arcadia Refining Co.'s No. 1 R. S. Johnson, 1,000 ft. from N and 1,000 ft. from E of survey, J. H. Mallory Sur. ..... Coring 3,690 ft.
Brennan and Wood's No. 1 Robertson, center of Robertson 41-ac. tract, Ira Stephenson Sur. ..... Shut down 3,661 ft.
Joe Burnham's No. 1 Lena Beck, 4,000 ft. from S and 1,200 ft. from W of survey, H. W. Augustine Sur. .. Drlg. 2,100 ft.
Cockrell et al's No. 1 C. A. Lee, 150 ft. from S and 150 ft. E of 26¼-ac. tract, W. L. Palmer Sur. ..... Derrick.
Clark and Cowden's No. 1 A. O. Phillips, 250 ft. from S and 250 ft. from W of 110-ac. tract, David Ferguson Sur. ..... Rig up.
Daniel and Hargrove's No. 1 Ann Callahan, 150 ft. from E and 150 ft. from S of 38-ac. tract, E. A. J. Evans Sur. ..... Set surface csg.
Decker et al's No. 1 T. A. Webb, 150 ft. from N and 150 ft. from W of 34.25-ac. tract and lease, G. H. Hooper Sur. ..... Shut down 2,700 ft.
Dumas et al's No. 1 A. O. Phillips, 150 ft. from N and 150 ft. from E of W 25.2-ac. of 75-ac. tract, S. Harrell Sur. ..... Derrick.
Home Oil Co.'s No. 1 F. D. Futrell, 150 ft. out of SW cor. and 520 ft. from E and 400 ft. from S line of 7.6-ac. tract, A. Lumbrara Sur., south of Gilmer ..... Shut down 2,400 ft.
Humble Oil & Refining Co.'s No. 1 A. O. Phillips, 258 ft. from N and 195 ft. from W of 25-ac. tract, S. Harrell Sur. ..... Rig up.
Humble Oil & Refining Co.'s No. 1 J. R. Edwards, 325 ft. out of SE cor. of the W 200 acres of the 251-ac. tract, B. Ferguson Sur. ..... Connecting up; T. D. 3,638 ft.
Humble Oil & Refining Co.'s No. 1 A. O. Phillips, 267 ft. from S and 225 ft. from W of 51-ac. lease, S. Harrell Sur. ..... Derrick.
Heydrick and Camp's No. 1 J. W. Free, 330 ft. from N and 330 ft. from W of 28-ac. tract, G. W. Hooper Sur. ..... Drlg. 3,600 ft.
Magnolia Petroleum Co.'s No. 1 Howard Hampton, 150 ft. from N and 150 ft. from E of most north NE cor. of 69-ac. lease and tract, David Ferguson Sur. ..... Set 6⅝-in. csg. 3,693 ft.; oil sand 3,696 ft.
Magnolia Petroleum Co.'s No. 2 Howard Hampton, 215 ft. from NW and 215 ft. from SW of 169-ac. lease, David Ferguson Sur. ..... Set 132 ft. of 12½-in. csg.
McMahon and McCollough's No. 1 E. H. Hamilton, 200 ft. from E and 150 ft. from S of 88-ac. tract, M. Chandler Sur. ..... Derrick.
McPhail and Smith's No. 1 Kay, 660 ft. from S and 660 ft. from W line of J. Elliott Sur., 1½ miles S of Big Sandy ..... Shut down 2,905 ft.
Mudge Oil Co.'s No. 1 J. W. Free, 150 ft. from E and 150 ft. from S of tract, David Ferguson Sur. ..... Derrick.
Joyce Richardson's No. 1 O'Byrne, 150 ft. out of SE cor. of 76-ac. tract and in William Bratton Sur. .... Location.
Sorrells & Duffey's No. 1 J. W. Wooden, 200 ft. from E and 200 ft. S of survey, Isham Williams Sur. .... Shut down 100 ft.
A. A. Trammell's No. 1 O. M. Victory, 150 ft. from E and 150 ft. from S of SW 100 acres of survey, R. A. J. Evans Sur. ..... Drlg. 3,000 ft.
Union Drilling Co. et al's No. 1 W. M. Phillips, 300 ft. from E and 300 ft. from S of 67½-ac. tract and lease, H. Edwards Sur. ..... Drlg. 125 ft.
R. M. Weaver, Jr. et al's No. 1 L. J. Everett, 330 ft. from E and 330 ft. from S of 173-ac. tract, W. Goodwin Sur. ..... Drlg. 2,540 ft.

VAN ZANDT COUNTY

Barton et al's No. 1 C. L. Hubbard, 600 ft. out of NE cor. of Hubbard 225-ac. tract, 3½ miles S of Canton, M. J. Cadena Sur. ..... Spudded and shut down.
Hart Petroleum Corp.'s No. 1 M. L. Cox, 1,785 ft. N of S line and 524 ft. E of W line of Cox 300-ac. tract in Nugent Headright Sur. ..... Drlg. 1,528 ft.
H. Helms et al's No. 1 Bogue, 647 ft. W and 155 ft. S of SE cor. of J. M. Brown 70-ac. in Marshall University Sur., SE of Van ..... Shut down 3,098 ft.
Joiner et al's No. 1 J. S. Meeks, 330 ft. out of the NE cor. of the 330-ac. tract, A. Ducher Sur. ..... Drlg. 2,548 ft.
Humble Oil & Ref. Co.'s No. 1 L. A. Dowdle, 1,027 ft. N of S line and 150 ft. E of W line, William Daniel Sur ..... Temp. abnd. 2,987 ft.
Kelly Oil & Gas Co.'s No. 1 Lemsford, center of Lemsford tract, John Conner Sur. ..... Shut down 2,300 ft.
Nell McMehory's No. 1 R. V. Murphy, 150 ft. from N and 150 ft. W of survey, H. Bailey Sur. ..... Shut down 2,450 ft.
W. P. Palmer et al's No. 2 W. P. Forster, 600 ft. from N and 450 ft. from E of SW cor. of Forster 151-ac. tract in the F. Montgomery Sur. ..... Shut down 3,000 ft.
W. A. Phillips et al's No. 1 Morris, 1,050 ft. S of N line and 350 ft. W of E line of center west of Morris 160-ac. tract in the C. L. Morris Headright Sur. .... Waiting on drill stem.
Pure Oil Co.'s No. 2 A. D. Clark, 70 ft. N of S line and 120 ft. E of W line of lease, J. Walling Sur. ..... Location.
Pure Oil Co.'s No. 7 F. B. Smith, 250 ft. E of W line and 723 ft. S of N line of lease in John W. Walling Sur. ..... Location.
Van Oil Association's No. 1 Tankersley, 200 ft. from E and 1,000 ft. from S of farm, L. Landers Sur. .... Shut down 2,378 ft.

WOOD COUNTY

Loche & Clark's No. 1 A. C. Pick, 165 ft. S of NE cor. G. C. Reeves 25-ac. tract, Daniel Fuller Sur. .... Shut down 2,008 ft.
Deep Rock Oil Co.'s No. 1 Maud Smith, center of Maud Smith 8 40-ac. tract, L. Johnson Sur. ..... Fishing 3,887 ft.
Main Holding Co. and Thelma Wells' No. 1 Stewart, 1,938 ft. from NE and 2,898 ft. from E line of survey, E. Rehorse Sur. ..... Moving in rig.
Vitek Oil Co.'s No. 1 Rosa Bogel, 250 ft. from N and 600 ft. from W of survey, Sarah English Sur. .... Spudded; shut down.
M. O. Walmar Oil Co.'s No. 1 J. A. Ivey, center of 57-ac. tract, 2 miles NE of Mineola, A. Hamilton Sur. .. Spudding.

WILDCAT OPERATIONS IN WEST TEXAS

(Continued from Page 42)

DAWSON COUNTY

Albaugh et al's No. 1 Robinson, C NW Sec. 46, Blk. M, E.L.&R.R. Sur. ..... Spudded 20 ft. and shut down.

ECTOR COUNTY

Galt, Brown & Penn's No. 1 Cowden, C SE Sec. 12, Blk. 44, Twp. 2s, T.&P. Sur. ..... Drlg. 4,212 ft.
H. F. Wurtz' No. 1 E. A. Ibbetson et al, 330 ft. from N and E lines of NW Sec. 16, Blk 46, Twp. 3s, G.M. M.Br.&A. Sur. ..... Shut down 3,275 ft.

EL PASO COUNTY

Lane-The Texas Company's No. 1 Malone, 2,110 ft. from SW and NW of Sec. 46, J. M. Day Sur. ..... Shut down 3,089 ft.
Tri-State Oil Co.'s No. 1 Bobadella, 1,325 ft. from S and E lines Sur. 264, S.F. No. 7,247 ..... Shut down 677 ft.; running 10-in casing.

FISHER COUNTY

Stanolind Oil & Gas Co.'s No. 2 Steele, 1,200 ft. E and 330 ft. N of SW cor. Sec. 210, B.B.B.&C. Sur ..... Top lime 1,600 ft.; shut down 3,015 ft.; show oil 2,924-34 ft.
The Texas Company's No. 1 Jean, 330 ft. from E and 400 ft. S of Sec. 201, Blk. 1, B.B.B.&C. Sur. ..... Drlg. 2,375 ft.

GAINES COUNTY

Landreth Prod. Co.'s No. 1 Ailey, 660 ft. from N and W of Sec. 2, Blk. A-30, P.S.L. Sur. ..... Fishing 2,795 ft.
Texas Consolidated Oil Co. et al's No. 1 Jones, 2,310 ft. from NE Sec. 4, Blk. A-8, P.S.L. Sur. ..... Shut down 3,435 ft.

GARZA COUNTY

Pandem Oil Corp.'s No. 1 Justice, 330 ft. from S and W of Sec. 12, Blk. 4, H.&G.N. Sur. ..... Spudded and shut down.
Perry & Posey's No. 1 Justice, 1,980 ft. from S and 1,680 ft. from E of Sec. 25, Blk. 6, H.&G.N. Sur. (3,500-ft. cable tool test) ..... Shut down 2,980 ft.

HOWARD COUNTY

Continental Oil Co.'s No. 1 Brindley, 660 ft. from S and E of Sec. 18, Blk. 32, Twp. 1s, T.&P. Sur. ..... Drlg. 3,285 ft.
Green O. & R. Co.'s No. 1 Denman, 990 ft. from S and 2,310 ft. from W Sec. 14, Blk. 20, Twp. 1s, T.&P. Sur. .. Spudded and shut down.

HUDSPETH COUNTY

Henshaw's No. 1 Love, C NE Sec. 9, Blk. 67½, P.S.L. Sur. ..... Shut down 400 ft.
Patillo & Welch's No. 1 Briggs, 300 ft. from S and W Sec. 13, Blk. 73, Twp. 7, T.&P. Sur. ..... Shut down 690 ft.
Theison's No. 1 University, 3,050 ft. from S and 2,225 ft. from E of Sec. 17, Blk. E ..... Spudded 35 ft. and shut down.

IRION COUNTY

Davis et al's No. 1 Suggs, 1,560 ft. from S and 925 ft. from W, Sec. 3,081, Blk. 28, H.&T.C. Sur. ..... Running 15½-in. casing 490 ft.
Dixie Oil Co.'s No. 1 Williams, 1,320 ft. from S and E of Sec. 1,196, T.T.R.R. Sur. ..... 300 ft. oil in hole from 4,155-63 ft.; shut down 5,945 ft.
Fox's No. 1 Horney, 1,520 ft. from N and 1,525 ft. from W Sec. 2, Blk. 3, H.&T.C. Sur. ..... Shut down 1,503 ft.
Straughn & Texannati Oil Co.'s No. 1 Tankersley, 150 ft. from S and 750 ft. from W of Sec. 4, Gonzales County School Land ..... Plugged back to 1,233 ft.; total depth 1,506 ft.

JONES COUNTY

Abers et al's No. 1 Burton, 150 ft. from S and 175 ft. from E of 42.4-acre tract in G. Martinez Sur. ..... Drlg. 1,003 ft.

Barney & Duffy's No. 2 King, 3,700 ft. from N and 200 ft. from E, Subd. No. 18, M. Bueno Sur. ..... Location.
Union Oil Co.'s No. 2 King, 4,100 ft. from N and 200 ft. from E, Subd. 18, Bueno Sur. ..... Material.
Andy Urban's No. 1 Riddle, 300 ft. from S and 150 ft. from E, Subd. 2, A. W. Hill Sur. ..... Top pay 1,700 ft.; drlg. 1,725 ft.; tested 30 bbls. daily.
Young & McNeill's No. 1 L. R. Cade, 150 ft. from N and 450 ft. E of NW cor. of J. A. Williams 200-acre tract in Sec. 17, but in Sec. 12, Blk. 19, T.&P. Sur. .. .. Shut down 2,590 ft.

LOVING COUNTY

Ervin & Mahres' No. 1 Thrope, 2,310 ft. from E and 330 ft. from S Sec. 46, Blk. 53, T.&P. Sur. ..... Shut down 810 ft.
Ervin & Mahres' No. 1 Meyer, 990 ft. NE and 330 ft. SE of Sec. 3, Blk. 2, W.&N.W. Sur. ..... Location.
Falbe & Evans' No. 1 Dean, 330 ft. from NE and 990 ft. from NW Sec. 79, Blk. 33, H.&T.C. Sur. ..... Shut down 1,465 ft.
Hoffman et al's No. 2 Ramsey et al, 2,310 ft. from NE and 330 ft. from SE Sec. 82 ..... Drlg. 3,807 ft.
Irwin et al's No. 1 Auld, 1,825 ft. from NE and 1,298 ft. from NW Sec. 47, Blk. 1, W.&N.W. Sur. ..... Rig up.
Lockhart & Co.'s No. 2 Bowen & Wells, 330 ft. from NE and SE of Sec. 92, Blk. 1, W.&N.W. Sur. ..... Shut down 4,050 ft.
Lockhart & Co.'s No. 2 fee, 676 ft. S, 330 ft. W Sec. 91, Blk. 1, W.&N.W. Sur. ..... Rigged up and shut down.
Martin et al's No. 1 Johnson, 1,320 ft. from NW and 330 ft. from SW Sec. 86, Blk. 1, W.&N.W. Sur. ..... Location.
Richmond Drlg. Co.'s No. 1 Russell, 990 ft. from NE and 330 ft. from NW Sec. 80, Blk. 31, W.&N.W. Sur.. Total depth 4,047 ft.; running 6⅝-in. casing.
Rush et al's No. 1 Wheat, 330 ft. from NW and SW Sec. 77, Blk. 1, W.&N.W. Sur. ..... Cellar.
Slagel Drlg. Co.'s No. 1 Cartwright et al, 2,310 ft. from S and 990 ft. from W Sec. 1, Blk. 57, Twp. 1, T.&P. Sur. ..... Total depth 3,182 ft.; plugged back to 3,174 ft.; top pay 3,175-80 ft.; testing shutoff.
W. A. Suddreth et al's No. 1 Capitola Pool, 2,970 ft. from NE and 990 ft. from NW Sec. 73, Blk. 33, H.&T.C. Sur. ..... Elev. 2,644 ft.; shut down 175 ft.
Tennant et al's No. 1 Martin, 990 ft. from NW and SW Sec. 66, Blk. 1, W.&N.W. Sur. ..... Drlg. 791 ft.
California Co.'s No. 3 Allen, 2,191 ft. from NW and 2,182 ft. from SW Sec. 90, Blk. 1, W.&N.W. Sur. ..... Shut down 3,782 ft.
California Co.'s No. 4 Allen, 3,121 ft. from NW and 3,113 ft. from SW Sec. 90, Blk. 1 ..... Top salt 855 ft.; drlg. 3,922 ft.

MENARD COUNTY

Priest's No. 1 Sorrell, 1,000 ft. from E and 200 ft. from S cor. Sec. 132, E.L.&R.R. Sur. ..... Shut down 2,860 ft.

PECOS COUNTY

Dittman's No. 1 Sanford, 330 ft. from NW and 1,650 ft. from NE of Sec. 55, Blk. 10, H.&G.N. Sur. ..... Location.
Honolulu Oil Co.'s No. 1 Webb, 3,140 ft. from N and 1,000 ft. from W of Sec. 105, Blk. OW, G.S.&S.F. Sur.. Drlg. 1,642 ft.
J. R. Miller et al's No. 1 Bennett, 359 ft. W of CWL Sec. 1, Blk. 119, G.C.&S.F. Sur. ..... Shut down 2,283 ft. for casing.
Penn Oil Co. et al's No. 1 Alvis, 2,358 ft. from S and 1,327 ft. from W Sec. 155, Blk. 3, T.&P. Sur. ..... Show oil 3,601-02 ft.; drlg. 3,781 ft.
Perren Oil Co.'s No. 2 Eaton, S of E Sec. 27, Blk. 3, H.&T.C. Sur. ..... Fishing 1,765 ft.
Pure Oil Co.'s No. 1 Harrison, 2,310 ft. from N and 330 ft. from W of Sec. 203, Blk. 3, T.&P. Sur. ..... Shut down 5,000 ft.
California Co. et al's No. 1 Thomas, 990 ft. from NW and SW Sec. 31, Blk. 34, H.&T.C. Sur. ..... Location.
Whitaker et al's No. 1 Mary Devlin, 150 ft. from N and 150 ft. from E Sec. 69, F. Hernandes Sur. ..... Shut down 430 ft.

REEVES COUNTY

R. T. Hansford's No. 1 Williams, 150 ft. from S and W Sec. 17, Blk. 6, H.&G.N. Sur. ..... Shut down 580 ft.
Humble Oil & Ref. Co.'s No. 1 Bolmorhea Livestock Co., 1,320 ft. from N and 1,320 ft. from W Sec. 33, Blk. 5, H.&G.N. Sur. ..... Drlg. 1,210 ft.
Lee O. White et al's No. 1 Hershersor, 330 ft. from N and W lines of Sec. 5, Blk. 51, Twp. 10, T.&P. Sur.. Shut down 4,525 ft.

RUNNELS COUNTY

Dutton et al's No. 1 Dean, 5,475 ft. from NE and 1,048 ft. from NW in J. Heil Sur. No. 419 ..... Shut down 2,335 ft.; testing water shutoff.

SCHLEICHER COUNTY

Eastland Oil Co.'s No. 1 Joe Tisdale, C Sec. 29, Blk. M, G.H.&S.A. Sur. ..... Fishing pipe 2,522 ft.
Wesner et al's No. 1 Nicks, 2,310 ft. from N and 2,362 ft. from E of Sec. 77, Blk. LL, T.C. Sur. ..... Top pay 4,000 ft.; init. prod. 2,300 ft. fluid in hole; ran casing with packer.
George Wilson's No. 1 Page, Sec. 40, Blk. L, 1,290 ft. from N, 1,570 ft. from W, G.H.&S.A. Sur. ..... Shut down 5,053 ft.

SCURRY COUNTY

G. E. Dickman and R. B. Pender et al's No. 1 F. C. Davis, 1,000 ft. N and 1,770 ft. W of SE cor. of Sec. 275, Blk. 2, H.&T.C. Sur. ..... Shut down 5,100 ft.
Scurry County Oil Exchange's No. 1 Earnest, 2,310 ft. from N and W Sec. 68, Blk. 3, H.&G.N. Sur. ..... Spudded and shut down.
Seifert & Dibbie's No. 1 T. M. Blackburn, 2,310 ft. from N and 2,310 ft. from W line of Sec. 153, Blk. 97, H.&T.C. Sur. ..... Shut down 3,375 ft.
Simon & Brock et al's No. 1 Cruse, 2,310 ft. from S and E Sec. 119, Blk. 97, H.&T.C. Sur. ..... Drlg. 825 ft.

TERRELL COUNTY

Big Bend Oil Co.'s No. 1 Bassett, C NW Sec. 155, Blk. D, M.-K.-T. Sur. ..... Shut down 2,669 ft.
Keck Pecos Trust Co.'s No. 1 Hamilton, C Sec. 6, Georgetown Ry. Sur. ..... Shut down 3,150 ft.
Miller Bros.' No. 1 Allison & Burke, C NW cor. Sec. 10, Blk. 176, T.&P. Sur. ..... Shut down 120 ft.
Mid-Kansas Oil & Gas Co.'s No. 1 Goode, 2,152 ft. from E and 330 ft. from S Sec. 26, Blk. 161, G.C.&S.F. Sur.. Shut down 6,120 ft.
Jones et al's No. 1 Pankenham, C SE NW Sec. 43, Blk. B-2, C.C.S.D.&R.G.N.G. Sur. ..... Drlg. 1,087 ft.

TOM GREEN COUNTY

Belding & Dutton's No. 1 Norsworthy, 2,640 ft. from S and 587 ft. from E of John McNeese Sur. ..... Shut down 760 ft.; show oil and gas 725 ft.
Mintex Oil Co.'s No. 1 Campbell Est., 446 ft. from S and 630 ft. from W of Sec. 180, Dist. No. 11, S.P. Sur. .... Shut down 1,994 ft.
Pratt & Hancock's No. 2 Lewis, 100 ft. N and 330 ft. E of most northerly SW cor. of Joshua S. Grant Sur. No. 2 ..... Shut down 200 ft.

UPTON COUNTY

Mintex Oil Co.'s No. 1 Lane, 2,310 ft. from N and 1,650 ft. from W Sec. 36, Blk. 1, M.-K.-T. Sur. ..... Shut down 2,134 ft.; running 6⅝-in. casing.
Rankin et al's No. 1 Cordova Union Land, 660 ft. from N and E Sec. 6, G.C.&S.F. Sur., 1¼ miles S of Rankin ..... Rig.

VAL VERDE COUNTY

Independent Operators' No. 1 Whitehead, SE SE Sec. 10, Blk. 4, I.&G.N. Sur., elev. 1,175 ft. ..... Shut down 5,420 ft.
O. O. Owens' No. 1 Mills, Sec. 128, Blk. 1, I.&G.N. Sur., elev. 2,130 ft. ..... Shut down 6,780 ft.

WARD COUNTY

Bradford et al's No. 1 Carson, 990 ft. from NE and SE Sec. 26, Blk. 5, H.&T.C. Sur. ..... Spraying 10 bbls. oil per day from 2,142 ft.; drlg. 2,155 ft.
Bradford & Abell's No. 2 Boogher, 1,160 ft. from NW and 800 ft. from SW, Sec. 11, Blk. 5, H.&T.C. Sur.... Drlg. 429 ft.
Bradford's No. 1 York, 330 ft. from NE and SE of Sec. 10, Blk. 34, H.&T.C. Sur. ..... Spudded and shut down.
Beckley et al's No. 1 Johnson, 4,140 ft. from NE and 990 ft. from SE Sec. 8, Blk. 32, H.&T.C. Sur. ..... Show gas 2,180 ft.; increase 2,197 ft.; shut down 2,215 ft.
Buster Black's No. 1 Hall & Roberts, 990 ft. from NE and 1,650 ft. from NW, Sec. 17, Blk. 32, H.&T.C. Sur.. Drlg. 1,306 ft.
Central Oil & Gas Co.'s No. 1 Barrow, 330 ft. from NW and 1,263 ft. from SW, Sec. 55, J. W. Jackson Sur. ..... Spudded and shut down.
Gibson & Johnson's No. 1 Johnson, 4,140 ft. from SE and 990 ft. from NE, Sec. 10, Blk. 32, H.&T.C. Sur.... Shut down 2,193 ft.
Gulf Prod. Co.'s No. 8 Hutchins, 2,310 ft. from S and 990 ft. from W of Sec. 3, Blk. F, G.M.M.B.&A. Sur.... Drlg. 250 ft.
Hankinson et al's No. 1 Emery, 3,090 ft. from SE and 510 ft. from SW, Sec. 26, Blk. 5, H.&T.C. Sur. ..... Top salt 840 ft.; pulling 10-in. casing; shut down 910 ft.
O'Quinn et al's No. 1 Cummins, 4,300 ft. from NE and 330 ft. from SE of Sec. 11, Blk. 5, H.&T.C. Sur. .... Location.
Pat Moran's No. 1 Sweatt, 1,470 ft. from SW and 150 ft. from NW Sec. 12, Blk. 5, H.&T.C. Sur. ..... Shut down 935 ft.; top salt 794 ft.
Rector Oil Co.'s No. 1 Smith, 1,320 ft. from N and E, Sec. 22, Blk. A, G.M.M.B.&A. Sur. ..... Running 10-in. casing; total depth 794 ft.
Shipley et al's No. 5 Hayzlett, 2,490 ft. from SE and 1,980 ft. from SW Sec. 17, Blk. 5, H.&T.C. Sur. ..... Shut down 2,520 ft.; 1,500 ft. oil in hole; waiting on tubing.
Simms Oil Co.'s No. 1 Himmel, 330 ft. from NE and 2,310 ft. from SE Sec. 30, Blk. B-29, P.S.L. Sur. ..... Drlg. 2,465 ft.; top pay 2,246 ft. and 2,325 ft.; 250 ft. oil in hole.
Sturm's No. 1 Jones, 330 ft. from SW and SE of Sec. 25, Blk. B-29, P.S.L. Sur. ..... Elev. 2,519 ft.; shut down 2,475 ft.
Shipley et al's No. 1 Monroe, 330 ft. SE SW, Sec. 3, Blk. 1 ..... Drlg. by tools 4,355 ft.

WINKLER COUNTY

White et al's No. 1 Owenby, 305 ft. from NE and 1,185 ft. from SE, Sec. 7, Blk. 32, H.&T.C. Sur. ..... Drlg. 2,190 ft.; top pay 2,171 ft.; 1,000 ft. oil in hole.
Liner Drlg. Co.'s No. 1 Campbell, 350 ft. from N and E cor. Sec. 2, Blk. B-5 ..... Shut down 4,640 ft.

WILDCAT OPERATIONS IN TEXAS PANHANDLE

(Continued from Page 42)

Interstate Prod. Co.'s No. 1 Frazier, C of W 100 ac., of SW, Sec. 177, Blk. 3 ..... Standardizing 2,256 ft.
Magnolia Pet. Co.'s No. 1 Heaston, NE cor. S½ NE, Sec. 164, Blk. 3, I.&G.N. Sur. ..... Cellar.
Nelson et al's No. 1 Crews, 330 ft. S and E, NW, Sec. 12, Blk. 25, H.&G.N. Sur. ..... S.D. 2,619 ft.
Operators Royalty & Prod. Co.'s No. 2 Vanniman, 330 ft. S and W, E½ NE, Sec. 175, Blk. 3, I.&G.N. Sur. . Drlg. 3,037 ft.
Pulse-Shell Pet. Corp.'s No. 1 Simpson, SE NE, Sec. 146, Blk. 3, I.&G.N. Sur. ..... Location.
Steckoll & Reiger's No. 1 Davidson, 660 ft. N and W, Sec. 64, Blk. B-2, H.&G.N. Sur. ..... Drlg. 2,152 ft.
Steckoll & Reiger's No. 1 Short, 330 ft. S and W, Sec. 17, B. E. Chaney Sur. ..... Spudded and S.D.
Sullivan & Ochiltree's No. 1-A Morse, 330 ft. S and W, N½ NE, Sec. 15, Blk. A-9, H.&G.N. Sur. ..... S.D. 2,636 ft.
Tarber's No. 1 Saunders, 330 ft. N and W, Sec. 3, Blk. 1, B.S.&F. Sur. ..... Location.
Warner Oil Co.'s No. 1 Morse, 320 ft. S and W, N½ NW, Sec. 68, Blk. 25, H.&G.N. Sur. ..... Cellar.

HUTCHINSON COUNTY

Danciger O. & R. Co.'s No. 1 Johnson, 330 ft. N and W, SE, Sec. 34, Blk. Y, A.&B. Sur. ..... Rigging up.
Deal O. & G. Co.'s No. 2 Sanford, 330 ft. N and E of N 80 ac., S 160 ac., Sec. 81, Blk. 46, H.&T.C. Sur. .. S.D. 450 ft.
Huber Prod. Co.'s No. 1 Johnson Bros. (Premier), 330 ft. N and E of W 60 ac., N 80 ac., NW, Sec. 3, Blk. Y, A.&B. Sur. ..... Big gas 2,330 ft. and 2,395 ft; drlg. 2,971 ft.
Huber Pet. Co.'s No. 1 McIlroy, 330 ft. S, 330 ft. W, Sec. 28, Blk. Y, A.&B. Sur. ..... T.D. 3,205 ft; plugged back to 2,934 ft.
Liner et al's No. 1 Johnson Bros., 990 ft. S, 330 ft. E, W½ SE, Sec. 29, Blk. Y, A.&B. Sur. ..... Spudded and S.D.
Stanolind O. & G. Co.'s No. 2-A Pitcher, 990 ft. S, 330 ft. W, SE, Sec. 19, Blk. M-21, T.C.R.R. Sur. ..... Plugged back 3,135 ft; swabs 20 bbls. per hr.; T.D. 3,150 ft.
Harry Steckel's No. 4 Whittenburg, 990 ft. N, 330 ft. E, NE, Sec. 59, Blk. Z, L.C.&S.F. Sur. ..... S.D. 3,043 ft; shot with 90 qts. 3,005-43 ft; swbd. 100 bbls. in 12 hrs.
Skelly Oil Co.'s No. 1 Johnson Bros., 660 ft. S and W, SE, Sec. 30, Blk. Y, A.&B. Sur. ..... S.D. 3,115 ft.
Timms-Deatch's No. 4 Moore, 330 ft. N and W, Sec. 124, Blk. 4, I.&G.N. Sur. ..... Rig.

LIPSCOMB COUNTY

Okla. Public Service Co.'s No. 1 C. W. Jones, NE SW, Sec. 100, H.&T.C. Sur. ..... T.D. 5,003 ft.

LUBBOCK COUNTY

Center Oil Co.'s No. 1 Bowles Ranch ..... Small S.O. 1,133-40 ft; S.D. 4,167 ft.

MOORE COUNTY

Cloud & Dana's No. 1 Jones, 330 ft. N and E, SW, Sec. 169, Blk. 3-T, T.&N.O. Sur. ..... T.D. 3,220 ft; estimated 74,000,000 ft. gas.
Dana O. & G. Co.'s No. 1 R. Utey, 330 ft. S and W, NE, Sec. 125, Blk. 3, T.&N.O. Sur. ..... T.D. 3,526 ft; making 5 bbls. wtr. and 1 bbl. b.s. per day.
Interstate's No. 1 Nield, C NE, Sec. 18, Blk. 44, H.&T. C. Sur. ..... Location.
Magnolia Pet. Co.'s No. 1 Jones, 330 ft. N, 330 ft. E, Sec. 170, Blk. 3-T, T.&N.O. Sur. ..... Drlg. 648 ft.
Sunray Oil Co.'s No. 1 Rupert, 660 ft. N, 330 ft. E, NW, Sec. 191, Blk. 3-T, T.&N.O. Sur. ..... Cellar.
Plains Holding Co.'s No. 2 Bivins, 1,115 ft. S, 627 ft. E, Sec. 93, Blk. 46, H.&T.C. Sur. ..... 3,000,000 ft. gas 2,135 ft; T.D. 2,550 ft; making 46,500,000 ft. gas.
Sunray Oil Co.'s No. 2 Jones, 330 ft. N and W, W½ SW, Sec. 164, Blk. 3-T, T.&N.O. Sur. ..... Rig on ground.
Texas Interstate P. L. Co.'s No. 1-23 Thompson, C N½ NE, Sec. 23, Blk. 44, H.&T.C. Sur. ..... Location.
Texas Interstate P. L. Co.'s No. 1-33 Sneed, C SW, Sec. 33, Blk. 6-T, T.&N.O. Sur. ..... Bldg. rig.
Texas Interstate P. L. Co.'s No. 1-37 Sneed, C NW, Sec. 37, Blk. 6-T, T.&N.O. Sur. ..... Location.
Texas Interstate P. L. Co.'s No. 2-55, C SE, Sec. 55, Blk. 6-T, T.&N.O. Sur. ..... Cmtng. cag. 225 ft.

MOTLEY COUNTY

Matador Oil Corp.'s No. 1 Owens, C NE, Sec. 10, Blk. G, B.&B. Sur. ..... S.D. 530 ft.

OLDHAM COUNTY

Amalgamated German-American Oil Corp.'s No. 1 Norton, 330 ft. S and E, Sec. 12, T.&N.O. Sur. ..... S.D. 400 ft.
Chambers et al's No. 1 Herring, CNL, Sec. 20, Blk. S, G.C.&S.F. Sur. ..... S.D. 800 ft.

ROBERTS COUNTY

Chicken Creek Oil Co.'s No. 1 Ledrick, 330 ft. N and W, Sec. 55, Blk. C, G.&M. Sur. ..... Repairing rig at 290 ft.
Travis et al's No. 1 Cunningham, 330 ft. S and W, Sec. 74, Blk. M-2, H.&G.N. Sur. ..... Drlg. 2,510 ft.

WHEELER COUNTY

Clarity et al's No. 1 Porter, NW cor. SE, Sec. 2, Blk. A-9, H.&G.N. Sur. ..... Rigging up.
Vollmert's No. 1 Porter, 330 ft. S and E, NE, Sec. 15, Blk. 27, H.&G.N. Sur. ..... Rigged up and S.D.

SOUTHWEST TEXAS PROVEN AREAS

(Continued from Page 34)

Houston Oil Co.'s No. 2 Rand Morgan ..... T. D. 4,819 ft.; testing 8 ft. of sand.

L. L. Smith's No. 1 Hunter, 150 ft. from S and W lines of N half of Hunter tract ..... T. D. 4,890 ft.; drlg.

Saxet Oil Co.'s No. 8 Dunn, 1,000 ft. N, 500 ft. W of No. 7 Dunn ..... T. D. 4,277 ft.; abnd.; salt water, 10 pct. oil.

WHITE POINT FIELD—SAN PATRICIO COUNTY

Saxet Oil Co.'s No. 4 White Point ..... T. D. 5,712 ft.; perforating csg. at 3,300 ft.

LAREDO DISTRICT
KOHLER POOL—DUVAL COUNTY

Humble Oil & Refining Co.'s No. 50 Kohler, 2,805 ft. from S line, 165 ft. from W line of Sur. 164 ..... T. D. 6,230 ft.; drlg.

COLE POOL—DUVAL COUNTY

Magnolia Pet. Co.'s No. 1 W. Benavides, 330 ft. from N and W lines, Sur. 172 ..... Drlg. 2,270 ft.

JENNINGS-MUCKELROY POOL—ZAPATA COUNTY

E. C. Brogan's No. 2 Montemayor, 450 ft. from N line, 150 ft. from W line of Blk. 11, Sur. 64 ..... Rigging up.

O. W. Killam's No. 9 Bustamente, Blk. 7, Share 5, Comitas grant ..... Drilling.

Pal-Mar Oil Co.'s No. 1 Bustamente, 150 ft. from NE and SE lines, Blk. 11, Share 5, Comitas grant ..... Rigging up.

Pray & Chamberlain's No. 8 Garza, 750 ft. to NW line, 450 ft. to NE line, Blk. 1, Zorro Subd. of Comitas grant ..... Rigging up.

RANDADO POOL—JIM HOGG COUNTY

Randado Oil Corp.'s No. 35 Palacios, 150 ft. to S line, 450 ft. to E line, Blk. 2, Sur. 291 ..... T. D. 1,301 ft.; waiting on cement.

CAROLINA-TEXAS POOL—WEBB COUNTY

George S. Marshall's No. 1 Benavides, 660 ft. from S line, 150 ft. from E line of Sur. 683 ..... Location.

WILDCAT OPERATIONS IN SOUTHWEST TEXAS

(Continued from Page 34)

BEXAR COUNTY

Ingersoll-Miller's No. 1 E. B. Carruth, 1,900 ft. S of Medina River, 1,520 ft. to W line of lease, in Francisco Rolen Sur. ..... T. D. 520 ft.; temp. abnd.

Ingersoll-Miller's No. 2 E. B. Carruth, 750 ft. S of No. 1 ..... T. D. 320 ft.; drlg.

John F. Camp.'s No. 1 Cheves, 12 miles S of San Antonio ..... T. D. 2,633 ft.; abnd. in Edwards.

J. M. Russell's No. 1 F. L. Price, 1,500 ft. to N line, 660 ft. W of tract in Angel Navarro Sur. ..... T. D. 1,332 ft; temp. abnd.

Schneider, Rees et al's No. 2 Claussen, 12 miles NE of San Antonio ..... T. D. 702 ft.; shut down.

CALDWELL COUNTY

Mills et al's No. 1 McMahon, 275 ft. SW line, 75 ft. SE line of tract, J. Pinchback Sur. ..... T. D. 2,442 ft.; drlg.

M. O. Rayor's No. 1 Dunlap, 150 ft. NW and NE lines of farm, Solomon Seal Sur. ..... T. D. 2,515 ft.; slight show oil in Edwards.

R. R. Ogden's No. 1 O. S. Alexander, 1,300 ft. from N line, 150 ft. from E line of S. Spiller Sur. ..... T. D. 2,338 ft.; tested sulphur water in Edwards with a little oil and gas.

COMAL COUNTY

Caldwell & Lanier's No. 1 T. J. Byler, 175 varas from W line, 370 varas from N line of 320-ac. tract in the H.E.&W.T. No. 5,894 Sur. ..... T. D. 698 ft.; trying to set 8¼-in. csg.

DEWITT COUNTY

Gibson & Sturm's No. 1 Clark, Dolores Alderete Sur. .... Rigging up.

DUVAL COUNTY

Coffee et al's No. 1 Jose Garza, center Sur. 49 ..... T. D. 900 ft.; changing rig.

Magnolia Pet. Co.'s No. 1 W. Benavides, 330 ft. N and W lines of Sur. No. 172 ..... T. D. 2,465 ft.; comp. 30,000,000 ft. gas.

O'Byrne et al's No. 1 Well, B.S.&F. Sur. No. 568 ..... T. D. 1,830 ft.; repairing boiler.

S. J. Carpenter et al's No. 1 Juan Benavides, Blk. 33, Mesquite grant ..... T. D. 1,712 ft.; drlg.

FAYETTE COUNTY

Elam & Reynolds' No. 1 Florence, M. Muldoon Sur. No. 13 ..... T. D. 2,200 ft.; shut down.

GOLIAD COUNTY

V. F. Neuhaus' No. 1 J. E. Pettus, 4,750 ft. N, 28 degrees 30 minutes W of extreme SE cor. of 3,418-ac. tract in Maria de Jesus Ybarbo Sur. ..... T. D. 3,853 ft.; drld. to present depth by Southern Crude Oil Pur. Co. a year ago. To be deepened to Pettus sand.

GUADALUPE COUNTY

Harry J. Bruner's No. 1 Jim Sherrill, 150 ft. N line, 1,360 ft. W line of tract, George Allen League ..... T. D. 678 ft.; ratholing for csg. seat.

McGarrity et al's No. 1 A. Wesch, Jr., 150 ft. to N and E lines of farm, H. M. Thompson Sur. ..... T. D. 807 ft.; changing to heavier rig.

Schleyer, Atherton and Armstrong's No. 1 Ogletree, Robert Smith Sur. ..... T. D. 1,530 ft.; shut down.

Linne et al's No. 1 J. E. Linne, center 263-ac. tract in V. Cortario Sur. ..... Derrick.

San Antonio Oil & Royalty Co.'s No. 1 Dibrell, 150 ft. from N and W lines of Sec. 6, H.&T.C.R.R. Sur. .... Location.

W. J. Walton's No. 1 Zoboroski, 700 ft. to W line of tract, 500 ft. S of Guadalupe River, in Joseph D. Clements Sur. ..... T. D. 987 ft.; drlg.

HAYS COUNTY

J. C. Jones et al's No. 1 Byder, John Ingram Sur. ..... T. D. 900 ft.; drlg.

JIM HOGG COUNTY

Magnolia Pet. Co.'s No. 1 Cuellar, Sur. No. 575 ..... T. D. 4,382 ft.; drlg.

Peterman & Minahan's No. 1 Palacios, Sur. No. 231 .... T. D. 1,360 ft.; shut down.

D. C. DeWitt's No. 1 Teofilo Gomez, 1,170 ft. from N line, 150 ft. from W line of Sur. 13 ..... T. D. 200 ft.; shut down.

JIM WELLS COUNTY

Gulf Production Co.'s No. 4 Schaeffer ..... T. D. 890 ft.; drlg.

Prairie Lee Prod. Co.'s No. 1 Oppenheimer ..... T. D. 1,000 ft.; dropped from report until work is resumed.

KENDALL COUNTY

Borgett et al's No. 1 Hagg, W. Avery Sur. ..... T. D. 1,165 ft.; shut down.

Dixon Oil Co.'s No. 1 Ottmar Behr, 823 ft. from S and N lines of Jessie Wilson Sur., 3 miles S of Sisterdale ..... T. D. 2,625 ft.; drlg.

Sitton et al's No. 1 Garvin, C of NE of D. L. Richardson Sur., in the D. L. Richardson Sur., 1 mile NE from Kendalia ..... T. D. 1,482 ft.; drlg.

Fred S. Dibble's No. 1 Eilebrach, Sur. 77, N part of county ..... Spudded in and shut down.

Hicks et al's No. 1 Speck & Wiedner, Thomas Sur. No. 27, 2 miles S of Twin Sisters ..... Location.

Permian Oil Co.'s No. 1 Taylor, Sec. 13, G.H.&S.A. Sur. .... T. D. 2,015 ft.; abnd.

KERR COUNTY

Herbert Oil Co.'s No. 1 J. D. Witt, 1,320 ft. N line, 1,320 ft. W line of Sec. 1,923, W. H. Hamilton Sur.... Spudded in and shut down.

Evans & Gant's No. 1 Seiker-Mears, C.C.S.D.&R.G.N.G. Sur. No. 1,605 ..... T. D. 2,018 ft.; shut down to set 8-in.

Evans & Gant's No. 1 E. Young, A. E. Burge Sur. No. 28 ..... Rigged up and shut down.

Evans & Gant's No. 2 Love, 150 ft. to S and W lines of Sur. 1,553 ..... Rigging up.

Evans & Gant's No. 1 Jeff Love, 1,320 ft. from W line of Sur. 1,594 and 660 ft. S of S line of Sur. 1,597 ..... T. D. 3,391 ft.; dropped until work starts.

B. M. Hatfield's No. 1 Westland, Blk. 23, Westland Subd. to Kerrville ..... T. D. 460 ft.; standing.

KIMBLE COUNTY

C. L. Bryant et al's No. 1 Lambert, 7,700 ft. N and W lines of F. Lotta Sur. ..... T. D. 850 ft.; standing.

Kamon et al's No. 1 Hodges ..... T. D. 2,910 ft.; shut down.

KINNEY COUNTY

C. R. Cox et al's No. 1 Rose, 1,344 varas from NW line, 100 varas from SW line of A. B. Harper Sur. ..... Location.

LAVACA COUNTY

F. P. Zoch's No. 1 Dobard, 950 ft. from N line, 150 ft. from W line of T. G. Western Sur. ..... Rigging up.

LIVE OAK COUNTY

Burke-Greis Oil Co.'s No. 1 West Ranch, James Vaughan Sur. ..... T. D. 3,200 ft.; drlg.

Henderson Coquat's No. 1 Hewitt ..... T. D. 54 ft.; set surface csg.

Illinois Exploration Synd.'s No. 1 Reeves-Brown, 1,300 ft. S of Sellers tract, 1,800 ft. E of Ry. ..... T. D. 2,150 ft.; temp. abnd.

Sid Keoughan's No. 1 C. E. Terrell, 600 ft. from N line, 1,900 ft. from E line, Dan O'Boyle Sur. ..... T. D. 3,122 ft.; temp. abnd.

LEE COUNTY

Burt et al's No. 1 R. C. Saunders, J. Maxmilian Sur. .... T. D. 3,718 ft.; drlg.

A. H. Wheeler and associates' No. 1 fee, Blk. 47, H. Donohue Sur. ..... T. D. 3,315 ft; coring.

C. B. Polk et al's No. 1 Stoltz, Hiram Donohue Sur. .... T. D. 2,100 ft.; drlg.

McLENNAN COUNTY

C. E. Groone et al's No. 1 League ..... T. D. 1,230 ft.; shut down.

McMULLEN COUNTY

Belt Pet., Inc.'s No. 1 Martin, 150 ft. NW line, 150 ft. to SW line of E. Melon No. 212 Sur. ..... T. D. 28 ft.; standing.

Camp and Stanolind's No. 1 Murphy, 1,845 ft. from W line, 165 ft. from N line, Sur. 123 ..... T. D. 1,250 ft.; drlg.

Whall, Scherer et al's No. 1 Shiner, Henry Brewer Sur... T. D. 1,720 ft.; drlg.

MEDINA COUNTY

J. H. Hickey's No. 1 Jungman, at N end Chicon Lake .... T. D. 425 ft.; shut down to move in heavier rig.

Sunflower Oil Co.'s No. 1 Mofield, J. Brothag Sur. No. 532 ..... T. D. 1,962 ft.; drlg.

F. E. Tegler's No. 1 J. P. Nixon, 600 ft. from W line, 584 ft. from N line of tract, near Ina Field ..... T. D. 418 ft.; drlg.

Yancey Development Co.'s No. 1 Fassler, Sur. No. 801 .... T. D. 1,682 ft.; drlg.

MILAM COUNTY

Dil-Tex Oil Corp.'s No. 1 Dilbeck, 450 ft. N and E lines of farm, Fernando Rodriguez Sur. ..... T. D. 2,320 ft.; drlg.

H. Elliott's No. 1 Kirkman, 150 ft. from NE lines of farm in M. Park Sur., NW from Gabriel ..... T. D. 1,470 ft.; drlg.

Red Bank Oil Co.'s No. 1 Foster, A. G. Berry Sur. .... Rebuilt derrick and moving in rig.

McMasters and Pomeroy's No. 1 Pluger, J. J. Acosta Sur... T. D. 1,606 ft.; temp. abnd.

J. E. McKee et al's No. 1 Littleton, 150 ft. from N and 225 ft. from W line of lease, C. Chevalier Sur. .... T. D. 510 ft.; shut down.

NUECES COUNTY

Southern Crude Oil Pur. Co.'s No. 1 Chas. E. Stratton, 1,650 ft. E line, 330 ft. S line of P. Sancho Sur. ..... Location.

REAL COUNTY

McGinley Corp.'s No. 1 Haby, C of SW Sec. 175 ..... T. D. 1,800 ft.; waiting for drill line.

Gant-Kilgore and Evans' No. 1 A. D. Auld, C.C.S.D.& R.G.N.G. Sur. No. 23 ..... T. D. 4,007 ft.; showing gas and oil; waiting on csg.

SAN PATRICIO COUNTY

United Production Co.'s No. 1 Mayfield ..... Rigging up.

STARR COUNTY

B. B. Tips' No. 1 F. Dayno, Lot 1, Porcion No. 81 ..... T. D. 332 ft.; standing.

Menyard et al's No. 1 Sealbury, 150 ft. from E line, 6,550 ft. from N line, Share 5, Porcion 75, Jurisdiction of Carmargo ..... T. D. 411 ft.; tested dry.

Los Olmos Oil Co.'s No. 4 Kelsey-Bass, 2,208 ft. from W line, 60 ft. from N line, Blk. 7, Subd. Porcions 75, 76 and 77, Jurisdiction of Carmargo ..... T. D. 410 ft.; set csg.

TRAVIS COUNTY

F. W. Fuchs' No. 1 Ballersted, A. Alexander Sur. ..... Dropped until work starts.

Franklin et al's No. 1 Wilson, A. Alexander Sur. ..... Dropped until work starts.

Ratcliffe et al's No. 1 Jim Jones, 1,000 ft. S line, 750 ft. E line of farm in Amos Alexander Sur. ..... T. D. 305 ft.; drlg.

Waldron et al's No. 1 Cook, D. H. Minor Sur., 8 miles SW of Austin ..... T. D. 645 ft.; drlg. shale.

WEBB COUNTY

Cole Pet. Co.'s No. 4 Benavides, Sur. No. 1,601 ..... T. D. 2,000 ft.; drlg.

Eugene Garner, Jr.'s No. 1 Billings, 411 ft. E line, 956 ft. N line of NW NE, Sur. 71 ..... Location.

WILLIAMSON COUNTY

Wilburn et al's No. 1 Caroline Hurts, P. Coursey Sur. .... T. D. 1,327 ft.; shut down.

Wilson et al's No. 1 Walker ..... T. D. 2,260 ft.; shut down.

WILSON COUNTY

A. M. Blume's No. 1 Nickolson, C. Diaz Sur. ..... T. D. 745 ft.; set 6⅝-in. csg.

ZAPATA COUNTY

T. H. Ward's No. 1 Uribe, 150 ft. NW line, 150 ft. SW line, Blk. 8 Subd., Share 7, Partition No. 6, T. Uribe Partition of Jose V. Borrego Sur. ..... Rigged up and standing.

Bill Henry et al's No. 1 Gopher Trust estate, Borrego grant ..... T. D. 1,398 ft.; drlg.

Penny Prod. Co.'s No. 1 Juan V. Cuellar, Jr., et al, 175 ft. NE line, 175 ft. SE line Poppas Subd., Porcion 33 and 34, Blk. 1, Sur. 2 ..... T. D. 2,035 ft.; drlg.

National Oil Co.'s No. 1 Zapata Trust Estate, 617 ft. Porcion 6 ..... T. D. 690 ft.; drlg. NW line, 96 ft. NE line, Blk. 97, De Prom Subd.,

National Oil Co.'s No. 2 Adams, 150 ft. from NW line and SW line, Blk. 11, Borrego grant ..... T. D. 1,320 ft.; drlg.

Mackenzie & Talmadge's No. 1 Trevino, 400 ft. SE line, 200 ft. NE line, Blk. 6, Sur. No. 4, Porcion 2 and 3 ..... T. D. 520 ft.; standing.

ZAVALA COUNTY

Lloyd North's No. 1 Mrs. Clay West Burns, 1,750 ft. N line, 3,100 ft. W line of 500-ac. tract in Sur. No. 200.. Location.

WILDCAT OPERATIONS IN LOUISIANA-ARKANSAS

(Continued from Page 31)

Ben Merritt, tr.'s No. 1 Wallums, NE cor. SW SW, Sec. 29-12-12 ..... Coring 2,634 ft.

E. T. Oakes' No. 1 R. H. Bryant et al, 200 ft. N and W, SE cor. NE NW, Sec. 30-13-15 ..... Drlg. 1,577 ft.

Rellitt Oil Co.'s No. 1 Gannon Hrs., 300 ft. S and E, NW cor. NW NE, Sec. 12-11-16 ..... Drlg. shale 1,015 ft.

Walters-Nicholson, tr.'s No. 1 Jim Guy, Sec. 3-11-13.... Rigging up.

NATCHITOCHES PARISH

W. M. Coats' No. 1 Collins, 730 ft. N, 50 ft. E, C, Sec. 28-9-10 ..... T.A. 4,091 ft.

J. W. Cooper et al's No. 1 Cooper, NW SW, Sec. 35-11-10 ..... S.D. 3,156 ft.

Cooper et al's No. 3-A Cooper, C SE SE, Sec. 32-11-10 .. S.D. 1,518 ft.

C. M. Talley et al's No. 1 C. M. Talley, 1,980 ft. W, 660 ft. S, NE cor. SE, Sec. 29-11-10 ..... Tested dry; S.D. 1,380 ft.

RED RIVER PARISH

La. Oil Dev. Co.'s No. 2 La. Delta Pecan Co., 2,950 ft. S, 300 ft. E, NW cor., Sec. 27-13-11 ..... Spudded in; S.D. 60 ft.

Over 200 Petroleum Products—each a leader in its field—each manufactured to the highest standards—to meet the needs of *every* industry in a superior way.

Build your business on our reputation for satisfactory petroleum products

Empire Oil & Refining Company

Subsidiary Cities Service Co.

GENERAL SALES OFFICES—TULSA, OKLA.

NEW YORK PHILADELPHIA CLEVELAND CHICAGO ST. PAUL
KANSAS CITY ST. LOUIS FT. WORTH TORONTO

Mack Jourden Co.'s No. 1 Lockett, 4,035 ft. S, 1,080 ft. E, NW cor. SW, Sec. 29, in Sec. 32-13-10 ..... Drlg. 1,100 ft.

RICHLAND PARISH

Alto Gas Co.'s No. 2 Hunt, 660 ft. S and E, NW cor., Sec. 13-17-5 ..... Derrick.
Southern Carbon Co.'s No. 2 Rosengraut & Ducomb, 1,-980 ft. N, 660 ft. E, SW cor., Sec. 19-17-6 ..... Set 6-in. 2,285 ft.
Southern Carbon Co.'s No. 3 Rosengraut & Ducomb, 660 ft. S and E, NW cor., Sec. 30-17-6 ..... Drlg. 2,012 ft.
Southern Carbon Co.'s No. 1-B C. M. Noble, 2,966 ft. N, 1,525 ft. W, cor. Secs. 7, 8, 17 and 18, in Sec. 37-15-6. Location.
United Gas Public Service Corp.'s No. 4 Earle, SE cor., Sec. 1-16-5e ..... 3,131,000 ft. gas 2,460 ft.

SABINE PARISH

Diffie & Barnett's No. 1 Lites (was J. W. Clark's), 330 ft. N, 330 ft. W, SE cor. SW NW, Sec. 34-8-11..... S.D. 105 ft.
R. L. Gay, tr.'s No. 1-A Long Bell Lbr. Co., 430 ft. S, 200 ft. W, NE cor. NW NW, Sec. 10-8-13..... Drlg. 3,200 ft.
Lacey Prod. Co.'s No. 1 Cooper, 330 ft. N, 330 ft. W, SE cor. SW NW, Sec. 30-8-11 ..... W.O.S.R; T.D. 2,620 ft.
Jean Longoria's No. 1 Belton (no check), Sec. 31-9-13.. Set 8-in. 1,590 ft.
H. W. Perritt's No. 4 Bowman-Hicks, SE cor. SE NE, Sec. 2-7-12 ..... Set 6-in. 2,203 ft.
H. W. Perritt's No. 1 Boring, NW cor. NW NW, Sec. 11-7-12 ..... 2,000 ft. oil in hole 2,602 ft; W. O.S.R.
Sabine Royalties Co.'s No. 1 Skinner, SW NW, Sec. 5-8-11. Dry and abd. 2,634 ft.
Stovall Drlg. Co.'s No. 1 Nulton, SE cor. NW NE, Sec. 1-7-13 ..... Set 6⅝-in. 2,075 ft.
A. H. Thames' No. 1 Edward est., 150 ft. NW SE cor. NE SE, Sec. 8-8-13 ..... S.D. for wtr. 1,200 ft.

TENSAS PARISH

Nick Barbare's No. 1 Mutual Realty Co., 660 ft. S and W, NE cor., Sec. 36-11-9e ..... Location.
A. R. Willis et al's No. 1 Currey, 1,320 ft. S, 1,320 ft. E, NW cor., Sec. 39-11-12 ..... Drlg. 3,545 ft.

WEBSTER PARISH

Coyle, tr.'s No. 1 Frazer, 200 ft. N, 200 ft. E, SW cor. NE SE, Sec. 27-23-11 ..... Derrick.

WEST CARROLL PARISH

United Gas Public Service Co.'s No. 1 Pioneer Cooperage, 663 ft. E, 3,954 ft. S, NW cor., Sec. 29-21-9 .... Drlg. 2,600 ft.

WINN PARISH

Gulf Ref. Co.'s No. 1-A Bodcaw Lbr. Co., 911 ft. N, 970 ft. E, SW cor., Sec. 4-10-5w ..... Rigging up.

ARKANSAS

CHICOT COUNTY

R. R. Smith's No. 1 Lytle, 660 ft. N, 660 ft. E, C, Sec. 21-23-3 ..... T.A. 2,925 ft.

COLUMBIA COUNTY

Joe Modisette et al's No. 1 Sharklee, C SW NE, Sec. 32-16-19 ..... Dry and abd. 2,357 ft.
Kendall Oil Co.'s No. 1 Fullenweider, Rhea & Kitchen Sec. 13-17-22 ..... S.D. 778 ft.

CLAY COUNTY

S. C. Jeffus' No. 1 Underwood, 510 ft. N, 350 ft. W, C NW SE, Sec. 4-20-8 ..... S.D; clearing titles 1,214 ft.

CLEBURNE COUNTY

(Cable tools)

Donnelly-Craver et al's No. 1 Donophan Lbr. Co., SE cor. NW, Sec. 33-11-9 ..... S.D. 3,740 ft.

DALLAS COUNTY

E. C. Brewer's No. 1 W. E. Hillman, 330 ft. E, 40 ft. S, NW cor. SE NE, Sec. 20-10-13 ..... S.D; W.O. 2,869 ft.
J. H. James, tr.'s No. 1 Fordyce Lbr. Co., 200 ft. S, 200 ft. E, NW cor. NW NE, Sec. 11-9-15 ..... S.D. funds 2,520 ft.

GRANT COUNTY

Spann & McClung's No. 1 Sarah Page, 660 ft. W, 660 ft. S, NE cor. NW, Sec. 3-3-12 ..... S.D. 1,024 ft.

HOT SPRINGS COUNTY

John Watkins' No. 1 Cunningham (was J. R. Lockhart's), 285 ft. S, 285 ft. W, NE cor., Sec. 11-5-16 .. Drlg. 675 ft.

LAFAYETTE COUNTY

Smitherman & McDonald's No. 1 Rogers, 330 ft. N and E, SW cor. NW SE, Sec. 17-15-22 ..... S.D. 2,035 ft.

LINCOLN COUNTY

Lawrence Cook, tr.'s No. 1 McGhee Planting Co., 420 ft. S, 220 ft. W, NE cor. NE SW, Sec. 5-8-7 ..... Drlg. shale and sand 1,326 ft.

LITTLE RIVER COUNTY

Roberts Oil Co.'s No. 1 H. J. Russell, 330 ft. E, 330 ft. S, NW cor., Sec. 25-12-29 ..... Location.

LOGAN COUNTY

J. H. Flowers' No. 1 J. H. White, Sec. 13-6-26 ..... S.D; W.O. 3,570 ft.

MILLER COUNTY

East Texas O. & G. Co.'s No. 1 Harvey, 500 ft. E, 300 ft. S, NW cor., Sec. 2-15-26 ..... T.A. 910 ft.
E. & F. Oil Co.'s No. 1 E. L. Beck, 200 ft. S, 200 ft. E, NW cor. SW, Sec. 36-15-26 ..... T.A. 2,968 ft.
Fitzwater et al's No. 1 Beck, 200 ft. N, 200 ft. W, SE cor. SW SE, Sec. 33-15-26 ..... T.A. 93 ft.
J. D. McRae's No. 1 Smith, 150 ft. N, 150 ft. W, SE cor., Sec. 28-15-26 ..... Derrick.
W. E. Noel et al's No. 1 Dickson hrs., 1,980 ft. W, 660 ft. S, NE cor., Sec. 11-20-27 ..... Location.

OUACHITA COUNTY

Copenhaven et al's No. 1 Elliott, Sec. 11-15-17 ..... Bailed dry 2,210 ft; S.D; W.O.
Boling & McLeon's No. 1 L. D. Nealy, 150 ft. S, 150 ft. W, NE cor. SE SW, Sec. 25-16-16 ..... Drlg. 1,325 ft.

PIKE COUNTY

E. R. Henderson's No. 1 Tilyou, 660 ft. W, 500 ft. S, NE cor. NE SE, Sec. 26-8-14 ..... T.A. 2,909 ft; (corrected depth).
E. R. Henderson's No. 1 J. L. Lee, 400 ft. S, 350 ft. E, NW cor. SW SE, Sec. 31-8-24 ..... Drlg. 650 ft.

SCOTT COUNTY

Heavener O. & G. Co.'s No. 1 Riser, Sec. 36-4-26..... S.D; T.D. 1,436 ft.
Waldron O. & G. Co.'s No. 1 White, NE cor. SW NW, Sec. 17-3n-29 ..... S.D; waiting on csg. 1,860 ft.

UNION COUNTY

Chapman & Wilson's No. 1 A. H. Hadley, 330 ft. N, 380 ft. E, SW cor. NE SW, Sec. 3-18-13..... 600 ft. fluid 30% S.W. in hole; T.A. 3,570 ft.

VAN BUREN COUNTY

Glenn Kohle et al's No. 1 Scalan, 200 ft. S, 200 ft. W, NE cor. SE NW, Sec. 5-19-12 ..... T.A. 50 ft.

WASHINGTON COUNTY

(Cable tools)

C. H. Willoughby's No. 1 Jones, Sec. 34-16-30..... S.D. for funds 1,795 ft.
H. H. Taylor et al's No. 1 Runny, C NE SW, Sec. 1-13-29. S.D. 1,700 ft.

YELL COUNTY

(Cable tools)

Tegmeier & Luckett's No. 1 Falcon, Sec. 36-7-21 ..... S.D. 5,710 ft.

EAST TEXAS

BOWIE COUNTY

Devore & Midfield's No. 1 Roy B. Cooper, 200 ft. S, 200 ft. W of NE cor. R. B. Cooper 115-ac. tr., Wm. Ward Sur. ..... Drlg. 2,135 ft.
Hindeman & Ball's No. 1 Merritt (was Maud-Redwater Oil Co.'s), 175 ft. N, 175 ft. E, SE cor. G. W. Hardidge 100-ac. tr. on Floyd Merritt tr. in Y. S. McKinney Sur. ..... Drlg. 2,425 ft.
Tarkington & Jones' No. 1 W. W. Whybark, 200 ft. S, 200 ft. W of SW cor. J. H. Dyer Sur. ..... Derrick.
Lee Timberlake et al's No. 1 Tidwell, 2,510 ft. N, 655 ft. W, SE cor. T. M. Rice Sur. ..... S.D; W.O. 3,000 ft; shale.

CAMP COUNTY

McDonald Bros.' No. 1 Tillery, 150 ft. E, 450 ft. S, NW cor. 127-ac. tr. in J. H. Murphy Sur. ..... S.D. 3,600 ft.

CASS COUNTY

E. K. Atkinson's No. 1 T. J. Wilson, 1,088 ft. S of N line, 2,376 ft. E of W line of H.R.S., J. R. McFarland Sur. ..... Derrick.
R. G. Baker's No. 1 W. R. Caver, on W. R. Caver 75-ac. tr., John Lick Sur. ..... Drlg. 1,850 ft.
Davis & Pigg's No. 1 Roy Brian, SW cor. Roy Bryan 88-ac. tr., Albert H. Latimer Sur. ..... S.D. 1,975 ft.
Everts Drlg. Co.'s No. 1 H. W. Whittington, 200 ft. S and W, NE cor. 69-ac. Whittington tr., L. Strong Sur. ..... Rigging up.
Geo. McKamie's No. 1 R. E. Hall, 150 ft. N, 150 ft. W, SE cor. Hall's 117-ac. tr., H. Buckler Sur. ..... S.D. 2,560 ft; chalk.
C. E. Murdock's No. 1 First National Bank, Evans Watson Sur. ..... S.D. 3,970 ft.
Olds & Smith's No. 1 Athens, 3,056 ft. W-E line, 856 ft. S-N line, J. C. Byers Sur. ..... S.D. 2,634 ft.
John C. Rogers' No. 1 L. E. Lanier, 573 ft. N, 879 ft. W, SE cor. Lanier 86 ac. in K. E. Welborn Sur. .... S.D. 2,275 ft.
John C. Rogers et al's No. 1 W. Q. Henderson, 3,100 ft. S, 3,100 ft. E, NW cor., Wm. Davis Sur. ..... S.D. 955 ft.

HARRISON COUNTY

Ben Banner's No. 1 J. C. Lowery, in center of J. C. Lowery 81-ac. tr., W. D. Stanfield Sur. ..... Drlg. 3,160 ft.
Everett Prod. Co.'s No. 1 R. L. Gypert, 1,320 ft. W of NE cor., 150 ft. at right angles from NE cor. of E. M. Wilder Sur. in Richard Hooper Sur. ..... Drlg. shale 3,180 ft.
Gholson et al's No. 1 Bivins Farm Co., on J. K. Bivins, Jr.'s 320-ac. tr., Thos. Toby Sur. ..... Began June 1; set 12½-in. 126 ft.
O. O. Olford et al's No. 1 R. W. Bolding, 330 ft. E of SE cor. J. B. Cullen's 161-ac. tr., 300 ft. N of N line of Mrs. C. L. Brown's 20-ac. tr., W. W. O. Stanfield Sur. ..... S.D. 2,050 ft.
Geo. L. Pace et al's No. 1 T. G. and Eugene Barker, 710 ft. N of S line, 1,930 ft. W of E line, SE cor. 230-ac. tr., Victor Pedraso Sur. ..... S.D. 4,116 ft.
O. H. Parkening's No. 1 T. J. Taylor, C, Blk. 32, W. H. Payne Sur. ..... Reaming 2,050 ft.
O. H. Parkening's No. 2 T. J. Taylor, C, J. C. Hawley Sur. ..... Derrick.
Rowan & Nichols' No. 1 Bussey est., center of Bussey 125-ac. tr., E. H. Merchant Sur. ..... Dry and abd. 3,561 ft.
Ryan Consolidated Pet. Corp.'s No. 1 Dr. H. H. Key, 1,500 varas N of SE line, 500 varas E of SW line, of E. Carroll Sur. ..... Drlg. 2,100 ft.
Seigel Bros. and Kelinson's No. 1 Taylor (no check), F. O'Neil Sur. ..... Derrick.
Thomas & Kinsey's No. 1 J. R. Watson, Thos. Iden Sur. . Derrick.

MARION COUNTY

Gist, Claunch & Dodson's No. 1 Miller, 1,470 ft. E line, 725 ft. N line, SW cor. H. Fulgran H.R. Sur. ..... Rigging up.
Geo. Hindman et al's No. 1 F. V. Lindsey, 2,500 ft. S, most northerly N line, 3,555 ft. E most easterly W line, Alexander Albright Sur. ..... Drlg. 2,685 ft.
Hindeman & Rhondo's No. 1 McGaughey, 1,547 ft. W, most northerly SW cor., 1,638 ft. N most northerly S line, W. J. Willis Sur. ..... S.D. 3,025 ft.
P. E. Hussey's No. 1 A. A. Trammell, Chas. Lockhart Sur. ..... S.D. 1,884 ft.
Shelton et al's No. 1 J. M. McNeal, 800 ft. S, 400 ft. W, NE cor. McNeal's 721-ac. tr., R. Fowler Sur. .... Drlg. 1,530 ft.

PANOLA COUNTY

Hoffer et al's No. 1 Cameron Lbr. Co., center 1,306-ac. tr. in W. M. A. LaGrove Sur. ..... Derrick.
Moses & Wallace's No. 1 Daniel, 600 ft. N and W lines, Mrs. Gerrell 100-ac. tr., SW cor. Isabel Hanks Sur... Derrick.
Jeffus & Lee's No. 1 Latham, Wm. Rich Sur. ..... Drlg. 525 ft.
J. L. Nelson et al's No. 1 J. W. Williams, 300 ft. S, 700 ft. W, NE cor. Williams' 67-ac. tr. in Jas. Hanks Sur. ..... Derrick.

RED RIVER COUNTY

D. M. Buffington's No. 1 Hossler, E. Hughhart Sur. .... S.D. 2,795 ft.
Johnson Pet. Co.'s No. 2 Randolph, Edw. Dean Sur. .... S.D. 2,280 ft.

SHELBY COUNTY

I. M. Bradley's No. 1 Ashberry (no check), G. W. Mitchell Sur. ..... Drlg. sandy shale 2,660 ft.
E. L. Chapman's No. 1 Pickering Lbr. Co., C. E. Henry (headright) ..... Drlg. lime 3,562 ft.
Chapperell Oil Co.'s No. 2 Holt, Matthew Moore Sur. .. Arranging to resume drlg.
H. H. Gracey's No. 1 J. A. Morrison, 1,500 ft. N, 200 ft. E, SW cor. J. A. Morris' 109-ac. tr., Wm. English Sur. ..... Drlg. 2,025 ft.
Joiner et al's No. 1 Foster & Billingsly, 150 ft. W of CEL Foster & Billingsly's 109-ac. tr., J. Bowlin Sur.. Began May 30; set 10-in. 174 ft; drlg. 500 ft.
T. A. Martin's No. 1 J. B. Bush, S 8° E, 2,000 ft. from NW cor. J. B. Bush's 77-ac. tr., thence E at right angles to said line 200 ft., Alfred Lindsey Sur. ..... Derrick (corrected).
Henry Maulding's No. 1 Frost Lbr. Co., NE cor. Frost Lbr. Co.'s 80-ac. tr., A. D. Fountain Sur. ..... Drlg. 1,880 ft.
Schultz et al's No. 1 Hughes, 150 ft. SW cor. Hughes' 110-ac. tr., J. Clay Sur. ..... Drlg. 2,340 ft.
Sloan Prospecting Co.'s No. 1 Sanford, approximately 300 ft. N and 200 ft. E, SW cor. B. Sanford 49-ac. tr. in M. M. Vann Sur. ..... Drlg. 2,825 ft.
Sloan Prospecting Co.'s No. 1 Windham, H. English H.R.S. ..... Testing in broken chalk 3,389 ft.
C. H. Tautenhahn's No. 1 J. C. Bogard, 300 ft. S, 900 ft. E, NW cor. J. C. Bogard's 52-ac. tr., Thomas Baker Sur. ..... Derrick.

LOUISIANA-ARKANSAS PROVEN AREAS

(Continued from Page 31)

State Line O. & G. Co.'s No. 1-A Holdiness, 1,062 ft. E, 760 ft. N, SW cor., Sec. 10-16-6e..... Rigging up.
United Carbon Co.'s No. 2 Cooper, 660 ft. N, 3,561 ft. E, SW cor., Sec. 13-16-6 ..... Began May 26; drlg. 100 ft.

SABINE PARISH—ZWOLLE

Roy Baker's No. 1 Sabine Lbr. Co., Sec. 1-7-12..... Derrick.
W. M. Coates' No. 1 Williams, NE cor., Sec. 23-7-11 .... Drlg. 2,300 ft.
W. M. Coates' No. 1 McNeely, NW cor. NE NW, Sec. 14-7-11 ..... Drlg. 2,190 ft.
W. M. Coates' No. 4-A Sabine Lbr. Co., Sec. 1-7-11 .... Flowing 150 bbls. 2,297 ft.
Hawkins et al's No. 1 Moran, Sec. 1-7-11 ..... 400 ft. oil in hole 2,620 ft; W.O. S.R.
O. A. Gautier et al's No. 1 Mischell, 330 ft. E, 150 ft. N, SW cor. SE NW, Sec. 30-8-12 ..... S.D. 2,260 ft.
Hawkins & Antoon's No. 1 Newton, Sec. 1-7-11 ..... Skidded over; set 10-in. 90 ft; drlg. 400 ft.
Jordan Drlg. Co.'s No. 1 McCormick, Sec. 2-7-11..... Location.
Jordan Drlg. Co.'s No. 2 La. Long Leaf Lbr. Co., Sec. 3-7-11 ..... 50 bbls. at 2,455 ft.
Zeke Lohman's No. 1 McCormick, 660 ft. E, 330 ft. N, SW cor. NE SW, Sec. 2-7-11 ..... Rigging up.
Lyons & Neely's No. 1 Duggan, NW SE, Sec. 14-7-11.... Location.
Lyons & Neely's No. 2 Byrd, Sec. 1-7-11 ..... Bailing to test 1,200 ft. oil in hole 2,480 ft.
L. K. McGuffin's No. 1 Bush, NW cor. NW SE, Sec. 1-7-11 ..... Began June 3; set 10-in. 95 ft; drlg. 350 ft.
Ben Merritt, tr.'s No. 2 Byrd, Sec. 1-7-11..... Began June 3; set 10-in. 88 ft.
George Pipes, tr.'s No. 1 Byrd, Sec. 1-7-11 ..... Set 6-in. 2,397 ft.
Sabine Royalties Co., Inc.'s No. 1 Hill, 400 ft. S, 200 ft. E, NW cor. NE NE, Sec. 5-7-11 ..... W.O.S.R. 2,506 ft.
Sabine Prod. Co.'s No. 2 Pearce, 858 ft. N, 530 ft. W, SE cor. SE NW, Sec. 10-7-11 ..... Bailing to test 2,425 ft.
Sabine Royalties Co.'s No. 2 Hill, Sec. 32-8-11..... Rigging up.
Eddie Self's No. 1 Jacobs, Sec. 1-7-11..... Testing with 500 ft. oil in hole 2,472 ft.
A. F. Tarver's No. 1 Cutrer, 330 ft. S and E, NW cor., Sec. 12-7-11 ..... Fishing D.S. 1,500 ft.

The Texas Co.'s No. 1 DeLatia et al, 1,070 ft. W, 990 ft. N, SE cor., Sec. 3-7-11 ..... Set 6⅝-in. 2,330 ft.
Houston-Sabine Prod. Co.'s No. 1 Sabine Lbr. Co. (was Triangle Pet. Co.'s No. 2 Sabine Lbr. Co.), 330 ft. N and E, SW cor., Sec. 36-8-12 ..... Set 6-in. 2,238 ft.
J. C. Walton's No. 1 Sabine Lbr. Co., 300 ft. S, 300 ft. W, NE cor. NW, Sec. 11-7-12 ..... Tested 2,376 ft; S.O; W.O.

WEBSTER PARISH

Cassidy & Davis' No. 1 Nickerson, 300 ft. S, 300 ft. W, NE cor. SW, Sec. 39-23-10 ..... S.D. 150 ft.

ARKANSAS

UNION COUNTY—EL DORADO

Lion O. & R. Co.'s No. 9-A O. F. Hayes, 242 ft. S, 246 ft. W, NE cor. Lot 5, NE, Sec. 4-16-15 ..... **Drlg. 3,856 ft.**
Southern Prod. Co.'s No. 1 Wingfield, NE cor. SE NW, Sec. 16-19-15 ..... **S.D. 2,603 ft.**

UNION COUNTY—URBANA

Marine Oil Co.'s No. 1 Winn est., 330 ft. S and E, NE cor. S½ NW, Sec. 11-18-13 ..... T.A. 3,586 ft.
Marine Oil Co.'s No. 1 Union Sawmill Co., 330 ft. N and E, SW cor. SE SE, Sec. 3-18-13 ..... Flowing 175 bbls. by heads 2,-551 ft.
Marine Oil Co.'s No. 2-E Thompson, 330 ft. N, 330 ft. E, SW cor. NE NE, Sec. 10-18-13 ..... Location.
Wilson & Chapman's No. 1 Adkins, 330 ft. N and W, SE cor. SW NE, Sec. 3-18-13 ..... Derrick.

EAST TEXAS

HARRISON COUNTY

Calatex O. & G. Co.'s No. 6 Argus, 755 ft. N, 699 ft. W, Mile Post 37, in J. Womack Sur. ..... Location.

PANOLA COUNTY

Ark.-La. P. L. Co.'s No. 14 Werner, 341 ft. S, 300 ft. W, NE cor. Werner 74-ac. tr., Ben C. Jordon Sur. .. Drlg. broken lime and sandy shale 2,510 ft.
Daisy O. & G. Co.'s No. 1 Rucks, John Palmer Sur. .... **S.D. 2,950 ft.**
Dillon & Bradham's (was W. G. Banks et al's) No. 1 C. O. Baldwin, 1,395 ft. W, 1,362 ft. S, NE cor. Baldwin 290 ac. in Hampton West Sur. ..... S.D. 1,555 ft.
S. E. Bell et al's No. 1 Burnett Lbr. Co., C, S, B. Hendricks Sur. ..... S.D; W.O. 2,335 ft.
C. D. Neff et al's No. 6 Brumble, B. C. Jordan Sur. .... Abd. location.
United Prod. Corp.'s No. 17 Steele, 1,320 ft. N, 660 ft. W, SE cor. C. D. Steele lse., in B. C. Jordan Sur. .... Location.
United Prod. Corp.'s No. 10 Warner, 388 ft. N, 2,467 ft. W, SW cor. Thos. Cox Sur. in Ben Jordon Sur. ..... Drlg. 3,490 ft.
Southwestern O. & G. Co.'s No. 1 E. R. Vinson, 3,005 ft. S, 1,001 ft. W, NE cor. C. T. Anderson Sur. ..... S.D. 2,650 ft.

MISSISSIPPI

HINDS COUNTY

Cleve Love et al's No. 2 Ridgeway-McGhee, SE cor. NW, Sec. 2-5-1e ..... Derrick.

RANKIN COUNTY

Miss. G. & F. Co.'s No. 1 Hanna, SW cor. SW NE, Sec. 14-5-1e ..... Derrick.

WILDCAT OPERATIONS IN MISSISSIPPI

CLARK COUNTY

Company, farm and location— Remarks:
Gulf Ref. Co.'s No. 1 Box, 526 ft. W, 498 ft. N, C, SE, Sec. 11-2n-15e ..... Dry and abd. 4,515 ft.

CLAY COUNTY
(Cable tools)

Ohio Oil Co.'s No. 1 Cantrell, NE cor., Sec. 16-15-5 .... Drlg. 3,938 ft.

HINDS COUNTY

Attkisson & Dyer's No. 1 Downing et al, SE NE, Sec. 27-6-1 ..... Drlg. 2,292 ft.
Howard Oil Co.'s No. 1 Jackson College, C NW NW, Sec. 9-5-1e ..... S.D. 74 ft.
Southern Pet. Co.'s No. 1 Wilson (was Tri-State O. & G. Co.'s), 330 ft. E, 340 ft. N, SW cor. SE NE, Sec. 28-6-1e ..... S.D. 20 ft; W.O.

JASPER COUNTY

Bay Springs Pet. Co.'s No. 1 Keyes, C NW NE, Sec. 3-12-9 ..... Coring 1,860 ft.

MONROE COUNTY

Amory Dev. Co.'s No. 1 Bourland, Sec. 2-13-19 ..... S.D. 3,015 ft.
McAlpine et al's No. 1 Cowart, second hole, Sec. 2-12-19.. Drlg. 2,354 ft.

NOXUBEE COUNTY

Thompson & Donohue's No. 1 Donohue, Sec. 25-16n-17e.. Derrick.

RANKIN COUNTY

Attkisson & Dyer's No. 1 Valentour, 300 ft. S, 300 ft. E, NW cor., Sec. 18-5n-2e ..... **Rigging up.**
Grandstaff et al's No. 1 Carr, 2,750 ft. W, 550 ft. N, SE cor., Sec. 13-5n-1e ..... Drlg. 2,413 ft.
Harding & Flint's No. 1 Webb, center Lot 32, Blk. B, East Jackson Place, Jackson City Subd., Sec. 12-5-1. S.D. funds 880 ft.
R. A. Moore et al's No. 1 Interior Lbr. Co., Sec. 28-6-1e.. S.D. 900 ft.
Cleve Love's No. 1 Muse, SE cor. SW SW, Sec. 28-7-4e.. S.D. 4,000 ft.
Square Deal O. & G. Co.'s No. 1 Spann, NW cor. SE NE, Sec. 13-5n-1e ..... Derrick.
Union Drlg. Co.'s No. 1 Pate Royalty Co., NW cor. Lot 11, Blk. F, E. Jackson Pl., First Addn., Sec. 13-5n-1e.. Location.

SCOTT COUNTY

M. U. Culley et al's No. 1 Owens, Sec. 2-8-9 ..... Derrick.

WARREN COUNTY

Eagle Bend O. & G. Co.'s No. 1 Kiger, SW cor. SW SE, Sec. 9-18-2 ..... **Drlg. 1,520 ft.**

WINSTON COUNTY

Miss. Drlg. Co.'s No. 1 Scarbrough, NW cor., Sec. 15-12-14 ..... Reaming 3,137 ft.

YALOBUSHA COUNTY

Collett-Carter Oil Co.'s No. 2 Blackmur, 990 ft. W, 385 ft. N, C, Sec. 11-11-4 ..... Drlg. 3,157 ft.

GULF COAST FIELDS AND WILDCATS

(Continued from Page 32)

Yount Lee Oil Co.'s No. 9 Chambers (D.D.), William Bloodgood Sur., 550 ft. from N line and 1,660 ft. from W line of tract ..... Tested salt water 5,515 ft.; pulling tubing and screen.
Yount Lee Oil Co.'s No. 3 Winfree, W. D. Smith Sur., 190 ft. out of NE cor. of tract ..... Drlg. hard lime 5,053 ft.

RACCOON BEND—AUSTIN COUNTY

Humble and Valley's No. 1 Martha Remmert ..... Location.

HUMBLE—HARRIS COUNTY

Rio Bravo Oil Co.'s No. 3 H.E.&W.T., Adams Sur., 250 ft. N along railroad tract from No. 1 and 25 ft. W from center of said tract ..... Drlg. lime with breaks of shale 4,742 ft.
Rio Bravo Oil Co.'s No. 1 Westheimer, John Brown Jones One-Third League, 800 ft. from E line and 100 ft. from S line of Blk. 1, in Lot 48, Westheimer Subd. ..... Location.
Sun Oil Co.'s No. 16 Bender, Adams Sur., Bender South Addition, 110 ft. N of N line of H.E.&W.T., 150-ft. right of way and 75 ft. E of C line of right of way.. Comp. gas well spraying oil through 3-in. line; total depth 4,027 ft.
Sun Oil Co.'s No. 24 Bender, W. B. Adams Sur., 24 ft. N of Rio Bravo's No. 2 H.E.&W.T. on Sun's east line ..... No report.

PIERCE JUNCTION—HARRIS COUNTY

Rio Bravo Oil Co.'s No. 14-A Settegast (workover) ..... Sand and shale showing oil 5,375 ft.; swabbing.
Rio Bravo Oil Co.'s No. 22-A Settegast, J. Kopman Sur. No. 44, 900 ft. S and 200 ft. W of NE cor. "A" lease.. Drlg. sand and boulders 2,110 ft.

LOST LAKE—CHAMBERS COUNTY

Pure Oil Co.'s No. 13 Mayes, B.B.B.&C. Sur. No. 4, 75 ft. W and 700 ft. S of NE cor. of survey ..... Drlg. hard sand and shale 5,252 ft.

PORT NECHES—ORANGE COUNTY

The Texas Company's No. 1 Polk-Kuhn-Glass, 260 ft. E and 1,545 ft. S of SW cor., Marshall Beaucham Sur., in the T. J. Notgrass Sur. ..... Rig.
The Texas Company's No. 3 Kuhn, 587 ft. S and 150 ft. W of NE cor. of the Mary E. Hall Sur. No. 2.... Location.

HIGH ISLAND—GALVESTON COUNTY

Yount Lee Oil Co.'s No. 21 Cade, Fitzsimmons Sur., 150 ft. W of No. 17 ..... Drlg. shale 4,106 ft.

NORTH DAYTON—LIBERTY COUNTY

Harrison-Abercrombie's No. 2 Jones, H.&T.C. Sur. No. 125, 50 ft. from N line and 450 ft. from E line of tract ..... No report.

ORCHARD—FORT BEND COUNTY

Gulf Prod. Co.'s No. 29 Moore, John Frazier Sur., 600 ft. N of No. 26 in line with Nos. 23 and 26 ..... Set 1 jt. screen 4,167 ft.; comp. flowing 400 bbls. pipe line oil on ½-in. choke.

DAMON MOUND—BRAZORIA COUNTY

D. C. Wellock's No. 1 Ramon, John P. Mills Sur., 1,115 ft. NE line and 60 ft. W line Blk. 1 ..... Drlg. gumbo 495 ft.

CLAY CREEK—WASHINGTON COUNTY

Sun Oil Co.'s No. 5 Carraway, J. F. Perry Sur., 600 ft. NW No. 2 and 200 ft. from W line ..... Total depth 1,992 ft.; plugged to 1,380 ft.; set 101 ft. 4½-in. screen; pumping 35 bbls.
Sun Oil Co.'s No. 6 Jamer, J. F. Perry Sur., 600 ft. NW No. 5 and 1,200 ft. from SW line ..... Drlg. shale 862 ft.

ESPERSON—LIBERTY COUNTY

Cranfill-Reynolds Oil Co.'s No. 7 Davis, David Kokernot Sur., 100 ft. S of No. 4 ..... Drlg. sandy shale 5,523 ft.
Cranfill-Reynolds Oil Co.'s No. 2 Moore's Bluff (workover) ..... Set screen 2,350 ft.; comp. flowing 40 bbls. fluid, 40% water.
Cranfill-Reynolds Oil Co.'s No. 19 Esperson, C. W. Fisher Sur., 400 ft. E No. 9 and 550 ft. N No. 14.... Rig.

BLUE RIDGE—FORT BEND COUNTY

Teischow, Cady et al's No. 5 Blakely, E. Drew Sur., 90 ft. E. 150 ft. S of NW cor. of E half, Lot 4, Blk. F .. Oil sand 2,980 ft.; standing cemented.

HANKAMER—LIBERTY COUNTY

Gulf Prod. Co.'s No. 14 Boyt, H.&T.C. Sur. No. 22, 500 ft. N of No. 10 ..... Drlg. sticky shale 2,986 ft.

SARATOGA—HARDIN COUNTY

Rio Bravo Oil Co.'s No. 117-A Cotton ..... Comp. 20 bbls. 500 ft.
Rio Bravo Oil Co.'s No. 118-A Cotton..... Drlg. 50 ft.

MOSS BLUFF—LIBERTY AND CHAMBERS COUNTIES

Humble Oil & Ref. Co.'s No. 2 Sergeant, east flank ..... Standing 5,931 ft.
Humble Oil & Ref. Co.'s No. 7 Sterling, J. McFaddin Sur., 350 ft. S and 100 ft. W No. 6 Sterling ..... Drlg. hard sand 6,054 ft.

REFUGIO—REFUGIO COUNTY

Houston Oil Co.'s No. 10 Wilson Heard, Refugio town tract, 150 ft. from N line and 150 ft. from E line of S 50-acre tract ..... Coring salt water sand 3,626 ft.
Houston Oil Co.'s No. 5 Mrs. M. H. Ryals, Refugio town tract, 150 ft. from N line of tract and 527 ft. east of No. 1 ..... Cored salt water sand 3,655 ft.; plugged to 3,649 ft.; cmtd. 7-in (O.D.) csg. 3,624 ft.
Houston Oil Co.'s No. 6 Pratt-Hewitt-Rooke (D.D.), Thomas Mullen Sur., 1,150 ft. N and 200 ft. W of SE cor. of tract ..... To make drill stem test, sand 3,702-05 ft.
Larco Oil & Gas Co.'s No. 1 Strauch, C Lot 13, Blk. 3 ... Milling on junk 3,695 ft.
Mission Drilling Co.'s No. 2 J. J. O'Brien, Refugio town townsite ..... Total depth 6,502 ft.; showing salt water; plugged to 6,400 ft.
Mission Drilling Co.'s No. 2 J. J. O'Brien, Refugio town tract, 150 ft. from E line and 150 ft. from S line of S 12½-acre tract ..... Cmtd. 12½-in. csg. 753 ft.
Moody-Seagraves Prod. Co.'s No. 3 O'Connor (D.D.), Refugio Town tract, 1,700 ft. from W line and 150 ft. from N line tract ..... Sand showing oil 6,440 ft.; cmtd. 5 3/16-in. csg. 6,432 ft.
Moody-Seagraves Prod. Co.'s No. 6 Morgan-O'Connor .... Total depth 6,470 ft.; sidetracked to sand showing oil 6,416 ft.; cem. 4½-in. csg. 6,405 ft.; drilled plug and set screen.
Moody-Seagraves Prod. Co.'s No. 2-A J. F. B. Heard ... Rig standing.
T. P. Morgan's No. 1 Lambert, Refugio Town Tract, 450 ft. from N line and 650 ft. from W line of 105-acre tract ..... Rig.
Pearson Properties' No. 5 Ryals, 174 ft. from S line of lease and 475 ft. E of No. 3 ..... Cmtd. 10-in. csg. 2,455 ft.
Ed Price's No. 3 Mission River, Refugio town tract, 750 ft. up river from No. 2 on S bank of river ..... Shut down 350 ft.
United Prod. Corp.'s No. 6 O'Brien, 150 ft. from S line of tract, 350 ft. W No. 3 ..... Drlg. lime and shale 4,451 ft.
United Prod. Corp.'s No. 3 Mitchell, 150 ft. from N line and 609 ft. from W line of tract ..... Total depth 6,458 ft.; plugged to 6,426 ft.; to perforate 5 3/16-in. casing in sand 6,411-21 ft.
United Prod. Corp.'s No. 1-B W. J. Fox, William Hews and L. Brown Sur., 2,541.7 ft. NE along SE line from SE cor. lease and 230 ft. NW at right angles ..... Rig.
United Prod. Corp.'s No. 4 M. F. Lambert, William Hews and L. Brown Sur., 2,541.7 ft. NE along NW line from SW cor. lease and 230 ft. SE at right angles ..... Location.
United Prod. Corp.'s No. 5 Holmes Heard, 660 ft. from N line and 2,375 ft. from W line Blk 8, town tract ..... Rig.

SOUTH LOUISIANA FIELDS
LOCKPORT—CALCASIEU PARISH

Vacuum Oil Co.'s No. 7 State, 319 ft. N and 260 ft. W SE cor. NE Sec. 8-10s-9w ..... Sand showing oil 6,628 ft.; cem. 7-in. csg. and 1 jt. screen; drilled plug and tested salt water.
Vacuum Oil Co.'s No. 5-A Farquahar, 105 ft. S and 110 ft. E of NW cor. SW NE Sec. 8-10s-9w ..... Derrick.
Yount Lee Oil Co.'s No. 2 Miller, 125 ft. N and 120 ft. W SE cor. NE NW Sec. 8-10s-9w ..... Oil sand 6,527-42 ft.; cmtd. 7-in. csg. 6,497 ft.

EDGERLY—CALCASIEU PARISH

Rex Pet. Co.'s No. 2 Prairie Narroni, Sec. 21-9s-11w, 365 ft. from S line and 50 ft. from E line of lease ..... Total depth 4,143 ft. in salt; sidetracked to 4,043 ft.; set 4½-in. liner; standing.

HACKBERRY—CAMERON PARISH

R. E. Seiss' No. 2 J. M. Vincent ..... Total depth in rock 2,042 ft.; sidetracked 970 ft. and drlg. cap rock 2,000 ft.
The Texas Company's No. 3 State ..... Derrick.
Yount Lee Oil Co.'s No. 34 State ..... Location.
Yount Lee Oil Co.'s No. 36 State ..... Location.
Yount Lee Oil Co.'s No. 37 State ..... Location.
Yount Lee Oil Co.'s No. 38 State ..... Location.
Yount Lee Oil Co.'s No. 39 State ..... Location.

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6-11-31

VINTON—CALCASIEU PARISH

Marrs McLean's No. 11 Gray (D.D.), Sec. 33-10s-12w ... Coring sand 2,323 ft.

SWEET LAKE—CAMERON PARISH

Magnolia Pet. Co.'s No. 2 Sweet Lake, Sec. 5-13s-7w ... Total depth 4,874 ft.; rebuilt derrick and rig after fire; to resume drlg.

Pure Oil Co.'s No. 5 Yount Lee (D.D.), Sec. 12-13s-8w... Killed well to deepen to 7,300-ft. sand; present depth 5,658 ft.

STARKS—CALCASIEU PARISH

Gulf Ref. Co.'s No. 27 Lutcher-Moore, Sec. 19-9s-12w .... Comp. pumping 25 bbls. 1,268 ft.

SULPHUR—CALCASIEU PARISH

Union Sulphur Co.'s No. 765 fee, Sec. 29-9s-10w ..... Tested salt water 4,330 ft.; pulled screen to deepen.

Union Sulphur Co.'s No. 767 fee, 328 ft. E and 180 ft. N of C Sec. 29-9s-10w ..... Drlg. 2,340 ft.

MISCELLANEOUS WILDCATS

TEXAS

AUSTIN COUNTY

O'Hara et al's No. 1 Schrader ..... Fishing 3,920 ft.

Parmerson & Cafferkey et al's No. 1 W. M. Schlecte, John Fitzgibbons Sur., 1,850 ft. from SE line and 3,100 ft. from NE line of survey ..... Changing rigs 1,107 ft.

BRAZORIA COUNTY

The Texas Company's No. 1 Belcher, Manvel, 167 ft. SE of NW line and 323 ft. NE of SW line, Lot 18, Blk. A, Suburban Gardens Subd. ..... Drlg. hard sand 1,226 ft.

United Oil Syndicate's No. 1 Speer, A. A. Talmadge Sur... Set 48 ft. 4½-in. screen 1,866 ft.; bailed salt water; plugged to 1,841 ft.; bailing.

BURLESON COUNTY

Mid-South Oil Co.'s No. 1 Duckworth ..... Drlg. water sand 3,070 ft.

Reynolds Oil Co.'s No. 1 Harris, 500 ft. from W line and 400 ft. from N line of J. M. McKean Sur. ..... Shut down 400 ft.

CALHOUN COUNTY

The Texas Company's No. 1 Smith, J. Timmins Sur., Will Mousin and Driscoll Subd. ..... Drlg. shale and lime 5,729 ft.

COLORADO COUNTY

United North & South Oil Co.'s No. 1 H. P. Lockwood, 3,100 ft. S line and 2,000 ft. W line J. R. Johnson Sur. ..... Abandoned in shale 5,585 ft.

FORT BEND COUNTY

Cullen & West and Gulf Prod. Co.'s No. 1 Lockwood, Clear Lake, John Rabb Sur., 300 ft. out of SW cor. 383-acre tract ..... Drlg. sand and boulders 872 ft.

GRIMES COUNTY

Rianjo Oil Co.'s No. 2 Cuthrell, Pat B. O'Connor Sur., center of 110-ac. tract ..... Derrick.

HARDIN COUNTY

Plummer & McDaniel's No. 1 T. S. Reed, 2,500 ft. from W line and 500 ft. from N line of T.&N.O. Sur. No. 284 ..... Cem. 12½-in. casing 134 ft.

HARRIS COUNTY

Hattie Baldwin's No. 1 Krahn, 250 ft. out of NW cor. L. Finn Sur. ..... Shut down in sand and gravel 209 ft.

Cypress Oil & Dev. Co.'s No. 1 C. Fritz, 500 ft. from N line and 500 ft. from E line of J. Duckworth Sur..... Sulphur water sand 451 ft.; cmtd. 8-in. casing; standing.

Humble Oil & Ref. Co.'s No. 5 Minnetex, Mykawa, 150 ft. from S line and 200 ft. from W line, Lot 261, William Lovett Sur. ..... Location.

Humble Oil & Ref. Co.'s No. 6 Minnetex, Mykawa, William Lovett Sur., C of Lot 254 ..... Drlg. shale 5,178 ft.

JACKSON COUNTY

Chicago-Gulf Co.'s No. 1 Rogers (workover) ..... Drlg. shale 3,900 ft.

LIBERTY COUNTY

J. R. Ingram's No. 1 C. T. Palmer, James Fenner Sur., 1,000 ft. from W line and 850 ft. from S line of tract ..... Derrick.

Hamm et al's No. 1 Harvard, Davis Hill ..... Gumbo 1,015 ft.; shut down.

Tucker et al's No. 1 Bell, H.&T.C. Sur. No. 4 ..... Gumbo 560 ft.; shut down.

MATAGORDA COUNTY

H. C. Cockburn's No. 3 Hawkins, Shepherds Mott, 4,810 ft. SE along SW line of Farnum Fry Sur., thence 242 ft. NE at right angles ..... Drlg. shale 4,190 ft.

Empire Gas & Fuel Co.'s No. 1 Baker, Citrus Grove ..... Heaving shale 6,413 ft.; set short string 5 3/16-in. csg. to protect hole.

MONTGOMERY COUNTY

Mike Hogg's (Lake Creek Oil Co.'s) No. 1 Hunt, south of Conroe ..... Drlg. 3,915 ft. (in Fayette).

H. W. Lowrie, Jr.'s No. 1 Groggan (G. J. Sunday), Cyrus Wickerson Sur. ..... Drlg. sand 2,756 ft.

Price & Wilhite's No. 2 Juerges ..... Drlg. shale 4,371 ft.

ORANGE COUNTY

Altex Oil Co.'s (Veteran Oil Co.) No. 1 Reed, A. Nelson Sur. No. 1, 500 ft. from N line and 250 ft. from E line of tract ..... Formerly temporarily abnd. 4,603 ft.; sidetracked hole 1,200 ft.; drilled to 1,820 ft.; shut down.

Crew Oil Co.'s No. 1-A Mansfield, 50 ft. E of No. 1 ..... Drlg. gumbo 902 ft.

POLK COUNTY

Freeman et al's No. 2 Freeman ..... Shut down 3,124 ft.

REFUGIO COUNTY

Blanco Creek Oil Co.'s No. 1 Damaan, 150 ft. from N line and 150 ft. from W line of Blk. 16, Bonnie View Ranch Subd. ..... Sand 4,168-74 ft.; reaming to make drill stem test.

Humble Oil & Ref. Co.'s No. 1 O'Connor, John Keating Sur., 6,013 ft. S from NE cor. along SE line of Lon T. Rios Sur., thence 7,375 ft. W at right angles in John Keating Sur. ..... Location.

SAN JACINTO COUNTY

E. P. Edward et al's No. 1 Bennett, northwest of Cold Springs ..... Spudded and shut down.

TYLER COUNTY

King Oil Co.'s No. 1 Caswell ..... Sand and shale showing oil 1,256 ft.; cmtd. 6-in. csg. 1,218 ft.

Allied Pet. Co.'s (Texas Southern Pet. Co.'s) No. 3 Wilson, Mrs. E. Cherry Sur. No. 798, 1,500 varas from W line and 600 varas from N line ..... Shut down 4,900 ft.

Lew Wents' No. 1 Mann, James Seals Sur., 330 ft. out of SW cor. 804.25-ac. tract ..... No report.

VICTORIA COUNTY

Houston Oil Co.'s No. 1 Conrad, T.&N.O. Sur. No. 1, 1,100 ft. from SW line and 100 ft. from NW line .... Cmtd. 13⅜-in. csg. 641 ft.

Simpson-Fell and Westheimer et al's No. 1 Levi, 2,200 ft. from SW line and 2,000 ft. from NW line of S.A.&M.G. Sur. No. 4 ..... Drlg. shale 4,337 ft.

T. B. Slick estate's No. 1 McFaddin, J. Vairan Sur., 17,700 ft. NE along SE line from S cor. of survey and thence 5,050 ft. NW at right angles ..... Sand showing gas 3,502-12 ft cem. 8⅝-in. csg. 3,495 ft.; drilled plug and set 21 ft. 4⅜-in. screen; blew out; trying to kill to repair connections.

The Texas Company's No. 3 McFaddin, S 15° W 6,200 ft. and N 75° W 1,850 ft. out of NE cor. John M. Rine Sur. ..... Rig.

United Prod. Corp.'s No. 4-A McFaddin, M. Travieso Sur., 1,320 ft. W along N line of C. L. Mann Sur. from NE cor. and 1,980 ft. N at right angles ..... Drlg. hard sand 2,285 ft.

WASHINGTON COUNTY

Joe Baker et al's No. 1 Kramer, Brenham, 600 ft. S and 300 ft. W NE cor. 92 acres ..... Drlg. shale 2,000 ft.

Penn-Tex Oil Co.'s No. 3 Kamas Brenham, S. M. Williams Sur. ..... Sand showing 3,020-21 ft.; hung up 10-in. casing.

Vegua Oil Co.'s No. 1 Graves, S. Clampit Sur., 200 ft. from N line and 900 ft. from W line 111-acre tract.. Drlg. shale 1,875 ft.

WHARTON COUNTY

H. H. Givens' No. 3 Hudgins, I. B. Phillips Sur., 19 ft. W of No. 2 ..... Drlg. gumbo 2,300 ft.

SOUTH LOUISIANA

BEAUREGARD PARISH

Beauregard Gas & Oil Co.'s No. 1 J. E. Cochran, 400 ft. S and 700 ft. W from NE cor., Sec. 34-4s-12w ..... Shut down 2,830 ft.

CALCASIEU PARISH

Crawford Doyle's No. 1 Johnson, Sec. 23-9s-13w ..... Shut down 875 ft.

J. O. Davis' No. 1 Industrial, Sec. 29-9s-10w ..... Set 6⅝-in. csg. with 172 ft.; 6⅝-in. screen on bottom 6,568 ft., drilled plug and bailed dry, standing.

Wilfred Lahay's No. 1 Jardell, Sec. 16-10s-12w ..... Shut down 3,258 ft.

Dr. Thomas et al's No. 1 John Hewitt ..... Location.

Vacuum Oil Co.'s No. 1 Walt (D.D.), 225 ft. out of SE cor. Sec. 12-9s-7w ..... Drlg. shale 6,570 ft.

CAMERON PARISH

Vacuum Oil Co.'s No. 2 Cameron Meadows, 3,120 ft. S and 1,900 ft. W from NE cor. Sec. 21-14s-9w (500 ft. S No. 1) ..... Drill stem stuck 4,312 ft.

The Texas Company's No. 7 State, Calcasieu Lake ..... Location.

IBERIA PARISH

Jefferson Lake Oil Co.'s No. 11 Lake Peigneur, Jefferson Island ..... Shut down 869 ft.

Jefferson Lake Oil Co.'s No. 12 Lake Peigneur, 3,100 ft. due W NE cor. Sec. 58-12s-5e ..... Abandoned in cavity 840 ft.

Jefferson Lake Oil Co.'s No. 13 Lake Peigneur, S 84°, W 3,100 ft. from NE cor., Sec. 58-12s-5e, thence 150 ft. N ..... Rig.

IBERVILLE PARISH

Standard Oil Co.'s No. 1 Gay, Bayou Choctou ..... Drlg. sand 4,328 ft.

Standard Oil Co.'s No. 7 Wilbert, Bayou Blue ..... Derrick.

Standard Oil Co.'s No. 6 Schwing, Bayou Blue, Sec. 73-9s-11e, 317 ft. S of No. 2 ..... Drlg. sticky shale 1,740 ft.

Standard Oil Co.'s No. 7 Schwing, Bayou Blue, Sec. 74-9s-10w, N 45 degrees, W 1,800 ft. from No. 5 .... Drlg. gumbo 965 ft.

Standard Oil Co.'s No. 9 Wilbert, Bayou Des Glaise, 700 ft. E and 760 ft. N of SW cor. SE SW Sec. 78-8s-8e.. Drlg. sandy lime 3,862 ft.

PLAQUEMINES PARISH

Humble Oil & Ref. Co.'s No. 4 Cockrell-Moran, Sec. 14-20s-26e, 1,905 ft. S and 2,860 ft. E of station .... Drlg. 1,112 ft.

TERREBONNE PARISH

The Texas Company's No. 6 State, Caillou Island ..... Total depth 4,486 ft.; sidetracking 3,512 ft.

The Texas Company's No. 1 La.L.&E., Bay St. Elaine ... Drlg. water sand 5,216 ft.

The Texas Company's No. 4 State, Dog Lake ..... Drlg. sand and lime 4,550 ft.

The Texas Company's No. 3 La.L.&E., Bay Junop ..... Location.

The Texas Company's No. 4 La.L.&E., Bay Junop ..... Location.

The Texas Company's No. 6 State, Lake Barre ..... Drlg. anhydrite 3,810 ft.

The Texas Company's No. 10 State, Lake Barre ..... Location.

The Texas Company's No. 11 State, Lake Barre ..... Driving piling.

The Texas Company's No. 12 State, Lake Barre ..... Location.

The Texas Company's No. 13 State, Lake Barre ..... Drlg. gumbo and lime 3,562 ft.

The Texas Company's No. 14 State, Lake Barre ..... Location.

VERMILLION PARISH

Pure Oil Co.'s No. 1 Alliance Land, Sec. 34-11s-1w, 2,600 ft. N and 300 ft. E of SW cor. section ..... Total depth 3,752 ft.; reaming hole to 12¾-in.

WEST FELICIANA PARISH

Putnam Syndicate's No. 2 Como Plantation, Sec. 51-1s-4w. Drlg. sand 1,755 ft.

CALIFORNIA FIELDS

(Continued from Page 40)

it will not be listed for completion until some time in July or August. There are three wells drilling in the Mesa Field of Santa Barbara County and, while commercial production may be developed in two, the absence of pipe line facilities will prevent them from remaining on production consistently. The Chanslor-Canfield Midway Oil Co. is conducting a production test on No. 2-A Hobson, which, at 10,030 feet, is the deepest well ever drilled. The Southern California Drilling Co. is abandoning No. 1 Bishop, a wildcat in the Goleta area of Santa Barbara County in Section 12-4-29, as a duster in the Sespe formation at 3,165 feet. The Merchants Petroleum recompleted its No. 1 Cochran and this well, in the Sespe region of Ventura County, is pumping 275 bbls. of 23.1 gravity oil.

The Shell Oil Co. will probably be in a position to test No. 1 Morris, a drilling well in the Weed Patch, or Mountain View Field of Kern County, during the next 10 days. No. 1 Morris is standing cemented with bottom of the hole at 5,784 feet. The Shell has apparently failed to discover a third zone in No. 1 Porter Day, a deep test which has been bottomed at 8,419 feet with a string of 4¾-inch landed and cemented at 7,905 feet. Upon being swabbed early in the week, it showed salt water and a little oil. Drilling operations during the past few weeks tend to indicate that the apex of the Mountain View Field will be southwest of the discovery well, although this is by no means certain. The Shell's deep test in the Semitropic Ridge is being plugged back by stages from 9,700 feet and will probably be abandoned unless the tests of showings encountered result in production. The outlook is distinctly discouraging and an ultimate abandonment is expected. The Associated's No. 1 Mitchell in the Jacalitos district of Fresno County is in a brown sandy shale at 4,890 feet. It was given a production test several weeks ago but the result was negative and the company resumed drilling. The Temblor Oil & Development Co. spudded in a wildcat at Blackwell's Corners in a wildcat area approximately midway between the Devils Den area and the North Belridge Field of Kern County. This district has possibilities as it is in the trend of production and may bear watching. The Standard has landed a string of pipe in its wildcat at Devils Den preliminary to conducting a production test of showings encountered between 2,700 feet and 3,200 feet. The showings are not especially encouraging but sufficient to justify making a production test. The Chanslor-Canfield Midway Oil Co. completed its second well on the Mon lease in the Mount Poso Field of Kern County when No. 2 in Section 26-27-28 was brought in pumping 190 bbls. per day from 1,561 feet.

JERSEY EMPLOYES STOCK

NEW YORK, June 8.—Shareholders of the Standard Oil Co. (New Jersey) have approved the fourth stock acquisition plan for employes, effective next January 1, or at a later date if deemed advisable by directors. Provision is made for the payment of subscriptions, up to 10 per cent of compensation, into a fund administered by trustees. The price at which trustees may buy stock from the company for the fund will be determined in the case of stock originally issued at not above or more than 10 per cent below the market price for the three months preceding each January 1 and July 1, and not below the par value. In the case of stock which the company shall have purchased, the price shall be the cost to the company, except that it may not exceed the price currently applicable under the terms for stock of original issue.

KUNO KUHN DEAD

BRADFORD, Pa., June 6.—Kuno Kuhn, veteran oil producer and natural gas distributor, died at the Bradford Hospital after a long illness. Mr. Kuhn had been in the oil business since the middle sixties. He was a native of Pittsburgh and after graduating from high school there he at once went into the oil fields and was a well known figure in all the development from the early Venango fields to Bradford, where he settled acquiring valuable oil properties.

SOUTHWESTERN DISTRICT SELECTS NEW OFFICERS

(Continued from Page 28)

mittee for new officers for the Southwestern district and as no nominations were made from the floor it was approved and the following officers and advisory committee elected unanimously:

Officers and Committees

District Section Officers: Chairman E. S. Durward, Shell Petroleum Corp., Dallas; vice chairman for East Texas, Blaine Johnson, Simms Oil Co., Dallas; vice chairman for West Texas, Harvey Hardison, California Co., Midland; vice chairman for North Central Texas, Mr. Stauffer, Panhandle Refining Co., Wichita Falls; vice chairman for Gulf Coast, W. C. Thomas, Vacuum Oil Co., Houston; vice chairman for Louisiana and Arkansas, Colonel O'Farrell, Standard Oil Co. of Louisiana, El Dorado, Ark.; secretary, John Ritter, Sun Oil Co., Dallas.

District Advisory Committee: Chairman, John R. Suman, Humble Oil & Refining Co., Houston; E. G. Allen, Shell Petroleum Corp., Dallas; E. H. Blum, Atlantic Oil Production Co., Dallas; J. D. Collett, Collett & O'Keefe, Fort Worth; T. J. Donoghue, The Texas Company, Houston; E. S. Durward, Shell Petroleum Corp., Dallas; F. V. Faulkner, Magnolia Petroleum Co., Dallas; Charles Fitzgerald, Pure Oil Pipe Line Co., Dallas; James Hutcheson, Rio Bravo Oil Co., Houston; R. H. Morrison, California Co., Dallas; Blaine Johnson, Simms Oil Co., Dallas; Roy B. Jones, Panhandle Refining Co., Wichita Falls; F. Ray McGrew, Standard Pipe Line Co. of Louisiana, Shreveport; Underwood Nazro, Gulf Production Co., Houston; M. B. Sweeney, Sun Oil Co., Dallas; B. S. SoRelle, Pure Oil Co., Fort Worth; and Frank Yount, Yount Lee Oil Co., Beaumont. Mr. Durward is an ex-officio member as district section chairman.

Selection of a city in which to hold the fall meeting of the district will be made by the executive committee but it was suggested that Shreveport and Dallas be considered because of either city's proximity to the new development in the East Texas area. It is customary to hold the fall meeting sometime between September 1 and 5 and the exact date will also be selected by the executive committee and announced later.

In closing the meeting at the suggestion of W. W. Scott, a rising vote of thanks and appreciation was given to the retiring chairman, Walter H. Meier, for the excellent manner in which he has directed the work of the Southwestern district during the past year.

OKLAHOMA FIELDS

(Continued from Page 28)

21-2w, is drilling at 4,540 feet. The Prairie Oil & Gas Co.'s No. 1 Green, NE cor. SE NE SW, Section 22-22-1w, has been abandoned at 2,300 feet. Empire Oil & Refining Co.'s No. 2 Fraler, SW cor. NE, Section 4-20-1w, has been completed for 5,500,000 feet of gas in sand 3,432-49 feet. Magnolia Petroleum Co.'s No. 2 Summers, SE cor. NW, Section 4-20-1w, made 9,000,000 feet of gas from sand 3,458-70 feet. Twin State Oil Co.'s No. 1 Stuart, SE cor. NE, Section 5-20-1w, has been completed for 10,000,000 feet of gas in sand 3,395-3,407 feet. Magnolia Petroleum Co.'s No. 1 Wooleson, NE cor. SE NE, Section 21-21-2w, is dry and abandoned at 5,223 feet. No. 1 Roberts, SE cor. NE SE, Section 21-21-2w, has been abandoned at 5,302 feet. Barnsdall Oil Co.'s No. 1 Minch, NW cor. SW, Section 12-21-1e, is dry and abandoned at 4,926 feet.

Muskogee County

H. E. Dowd and others' No. 1 Hembree, C NW NE, Section 23-10-19, is a dry hole at 1,500 feet.

Okmulgee County

Mack Drilling Co.'s No. 1 Peterson, NE cor. SE SE SW, Section 30-13-14, is spudding. Murta & Sherry's No. 1 H. Fulsom, NE cor. SW, Section 21-16-11, has been completed for 1,500,000 feet of gas in sand 1,927-42 feet.

Oklahoma County

Indian Territory Illuminating Oil Co. and others' No. 6 M.K.&T., NW cor. SW SW, Section 35-12,3w, Oklahoma City Field, flowed 10,441 bbls. in 5¼ hours in Wilcox sand topped at 6,275 feet, total depth 6,392 feet. Phillips Petroleum Co.'s No. 1 Sam, NW cor. SW SE NE, Section 3-11-3w, has been completed for 8,600 bbls. in 4½ hours on 4½-inch choke, producing from Wilcox sand topped at 6,279-6,395 feet, total depth 6,400 feet. T. B. Slick estate's No. 2 Central, SE cor., Section 3-11-3w, made 2,987 bbls. in three hours from Wilcox sand 6,225-65 feet, total depth 6,530 feet. No. 3 Frisco, CSL NE NW SE, Section 3-11-3w, made 5,344 bbls. in four hours from Wilcox sand 6,245-6,360 feet, total depth 6,369 feet. H. F. Wilcox Oil & Gas Co. and Anderson & Kerr's No. 1 Roach, CNL SW NW NW, Section 10-11-3w, topped Wilcox sand at 6,425 feet, drilled to total depth, 6,530 feet, and made 6,174 bbls. in 5¾ hours. Phillips Petroleum Co.'s No. 1 Perry, NW cor. NE SW, Section 10-11-3w, has been completed for 5,292 bbls. in four hours from Wilcox sand 6,395 feet, total depth 6,524 feet. No. 1 Henderson, SW cor. NW NW NE, Section 10-11-3w, topped Wilcox sand at 6,308 feet, drilled to 6,476 feet and made 6,504 bbls. in four hours on 5¼-inch choke. Mabee and others' No. 1 Mills, SE cor. NE NW, Section 10-11-3w, has been completed for 8,645 bbls. in four hours from Wilcox sand topped at 6,338 feet, total depth 6,510 feet.

Pittsburg County

Choctaw Gas Co.'s No. 1 Lovier, NE cor. SE NE, Section 8-7-18, made 27,000,000 feet of gas from sand 1,725-1,996 feet.

Pottawatomie County

Tillman and others' No. 1 Gilbreath, SE cor., Section 25-7-4, is pumping 150 bbls. from Viola lime 4,070-4,222 feet.

Wagoner County

J. Bailey's No. 6 Replogle, SE cor. NW NE, Section 31-19-16, has been abandoned at 750 feet. Hartman and others' No. 1-A Sarty, NW cor. SE SW NW, Section 7-17-16, is dry and abandoned at 1,070 feet.

GULF COAST FIELDS

(Continued from Page 32)

area has been two deep dry holes, one a considerable distance to the north of the field and the other to the west, both being put down by Gulf Production Co.

Clear Lake

After being pinched in to around 3 bbls. hourly because of lack of storage, Cullen & West and Gulf Production Co.'s No. 1 Lockwood & Nash, discovery well of the Clear Lake (Thompson) Field, eastern Fort Bend County, was opened up on a half-inch choke late in the week and flowed at the rate of 60 bbls. hourly. Gulf Pipe Line Co. has completed its new 6-inch line from the field to its Big Creek line, 5½ miles distant, and now is taking the oil. The well was completed May 21 flowing at the rate of 400 bbls. daily on a quarter-inch choke. Sand is at 3,087 feet. These operators' second test in the field, No. 1 Lockwood, is drilling below 1,000 feet.

Lockport Field

Vacuum Oil Co. again has tested salt water in its No. 7 State, in the northwest extension pool of the Lockport Field. Sand was at a total depth of 6,628 feet. This test, a west offset to the discovery well, tested salt water in the present producing horizon at 6,567 feet several weeks ago and since has been deepened to the lower sand, so far not reached by other wells in the area. Yount Lee Oil Co.'s No. 2 Miller, south of the the discovery well (the same company's No. 1 Miller), and a north offset to Union Sulphur Co.'s No. 2 Martha Moss, has picked up the sand at 6,527-42 feet and has cemented 7-inch casing to test.

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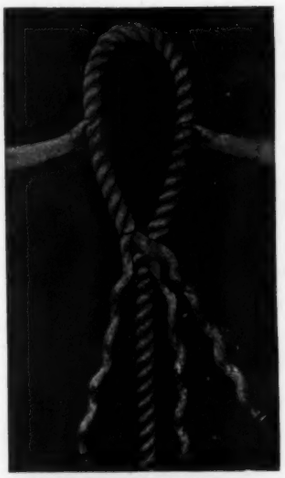

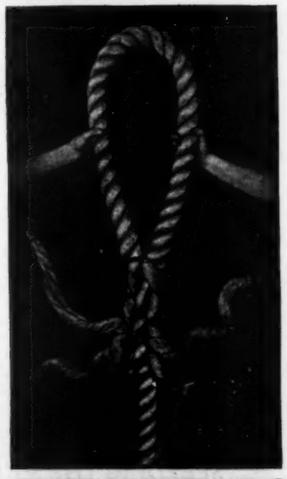

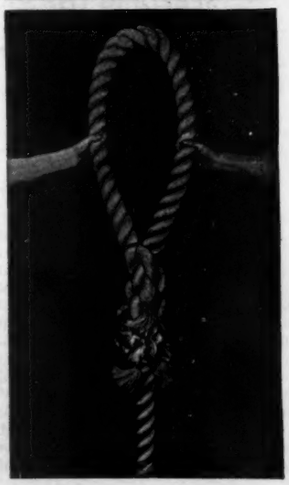

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RATABLE TAKING IS A.P.I. MEETING KEYNOTE

(Continued from Page 15)

was upon the industry even before East Texas was discovered.

It is predicted that this area will be a large factor in the future oil production for five or six years, a condition which makes the need for curbing overproduction there all the more necessary.

The new law must be so framed that it will permit control orders to be enforced against both large and small offenders, Mr. Roeser thinks, but he also believes results will be attained more quickly if all producers would immediately cooperate voluntarily to the end that all might make a profit out of the oil from this and other districts in Texas and other oil-producing states.

C. V. Terrell Speaks

Although not on the regular program, Judge C. V. Terrell, chairman of the Texas Railroad Commission, was called upon by Chairman Penn and made an excellent plea for laws that would permit the commission to enforce its rulings.

Judge Terrell stated that as matters now stand the commission is unable to enforce the rulings it makes and its members even stand in danger of being adjudged in contempt of courts that have enjoined them from enforcing the rulings of ratable taking from wells in East Texas.

This is a rather strange state of affairs, in the opinion of Judge Terrell, for it is well recognized in Texas that if a man steals a horse, or is even suspected of stealing a horse, he must go to trial and no judge will issue an injunction against another legal body denying them the power to give the suspect a fair trial.

Under the existing laws of Texas waste of natural resources of the State as interpreted by the Railroad Commission is a misdemeanor but a district judge in East Texas has issued an injunction preventing the Railroad Commission from enforcing its orders to prevent this type of waste by overproducing oil.

The Railroad Commission can only issue its orders and it is up to the attorney general to see that they are obeyed but the laws upon the statute books of Texas at this time provide no machinery for carrying out these orders and it is hoped public opinion will soon be so aroused that Governor Sterling will call an extra session of the state legislature to enact laws that will put "teeth" in the Railroad Commission's orders.

Judge Terrell feels the orders so far issued by the commission have been fair and equitable and that it is up to the citizens of Texas to demand laws that will permit their enforcement for what will injure the oil man will work a hardship upon all citizens. The loss of gross production tax from wells in other sections of the State that cannot produce their oil under the present low prices existing because of the price cuts in all districts following the debauchery in East Texas will mean that other taxes must be increased to make up for those losses.

Money lost by oil producers and others will affect the purchasing power of oil field workers of other commodities and this will be felt by merchants everywhere and instead of being a blessing this new field will result in a loss to everyone if not put under control quickly.

Postage Stamp for Barrel of Oil

Mr. Penn next called upon E. A. Landreth, North Texas independent producer, who stated that under the new price schedule his properties in other fields were able to earn him a 2-cent profit over production costs. This condition of affairs cannot be permitted to continue and Mr. Landreth pleaded with those assembled to quit kidding themselves and to take serious steps to curb the greed of a few outsiders who have recently broken into the oil business with comparatively small investments in East Texas.

It is also necessary, he said, for the major companies to put their houses in order for they cannot permit conditions such as now exist in East Texas and all other districts in that State and in all other producing states to continue. He stated he had reliable information that one major company had contracted for 600,000 bbls. of East Texas oil at 19 cents and that the average price now being paid for crude oil in that area was about 22 cents per barrel at the well. This has since been materially reduced and is now nearer 15 cents per barrel.

Mr. Landreth stated he had prepared a petition, independent of the American Petroleum Institute, as that organization is prevented by its constitution from fostering activities of that kind, which is to be presented to the governor asking that he call a special session of the legislature at once to enact laws necessary to regulate the production of oil and prevent waste.

No compromise, he said, can be worked out that will correct this situation and it is only by ratable takings of oil from all fields that the industry can prosper and to this end a fair and equitable law must be enacted and then enforced.

Mr. Landreth stated that proration is here to stay and as an independent operator he is for it and has found that under this method of operation his drilling costs have been lowered, the total amount of oil recovered has been increased and the best results in every phase of production operations have been obtainable.

There are over 100,000,000 bbls. of empty storage in this country at this time, according to Mr. Landreth, and if this condition of low price continues it will be filled and then, having no place to store additional oil, all fields will be closed down and a more stringent condition than ever could exist under proration will be brought into being.

President E. B. Reeser of the American Petroleum Institute followed Mr. Landreth and stated that the present conditions within the petroleum industry are without precedent but had all been brought about because of the action of a small number of violators of the orders of the Railroad Commission, probably not to exceed 25 or 30 companies and individuals in the East Texas area.

Because of their stand the whole industry is being penalized and this is not as it should be for it has a great deal to be proud of in the way of accomplishments in, and, while it has been in difficulties before, the situation that has developed in East Texas is likened to the proverbial "last straw."

Mr. Reeser predicts that the industry will have proration for a long time and perhaps never again be in a position where demand will be such that the full supply of oil the industry can produce and refine will be required to meet the needs of the consumers.

If proration fails, even temporarily, the results will be much more drastic than anything that could happen under proration. Public sentiment has been remiss in its attitude toward violators of well-established customs of the industry and the problems of the oil industry are also those of the banker, merchant and man on the street. Every man should be interested in the success of the petroleum industry and Mr. Reeser expressed the hope that steps would be taken immediately to arouse this interest.

"Proration in Retrospect"

This was the title of a paper presented by Warner Clark of the Standard Oil Co. of California, San Francisco, Calif., following Mr. Reeser's address and in it Mr. Clark attempted to review the present situation in the petroleum industry in the light of conditions as they may exist 100 years hence.

Mr. Clark presented the thought that conservation in its true sense means more than the stopping of physical waste of oil or gas by overproducing it, because even though oil might be produced at an immediate profit under such conditions, this would not result in any lasting gain, for in every barrel of oil there are many valuable products and each should be conserved in full measure. If oil is used only to make gasoline, kerosene and fuel oil without regard for other products that can now be manufactured from the crude the loss of these additional finished products will affect some future generation and may cause much inconvenience.

Even with the apparently inexhaustible supply of oil now known to exist and the possibilities of future pools being discovered this valuable natural resource cannot be replaced. Mr. Clark went on to show how present methods will eventually lead to future complications and feels the present generation has no right to assume that future generations will find suitable substitutes for the products of petroleum.

Glib statements about the distillation of crude oil substitutes from shale oils upon a scale that will replace the present production of oil wells, or the replacement of internal combustion engines of the present type with others that will use alcohols for fuel, he felt, should be greatly discounted. These changes would not be so easy of accomplishment and until science has actually advanced to that point where it can be definitely proven that other products than those derived from crude oil can be used for those purposes for which petroleum is now so extensively used, every barrel of crude oil should be conserved by reducing it to every fractional product now required by the consumer. If the percentage of gasoline to be extracted from a barrel of crude oil can be increased over the present average recovery this practice should be encouraged, for this would mean the use of fewer barrels of crude oil from the present known resources of the nation and save to future generations that much more of this valuable commodity which may 100 years hence be used for many purposes now unknown to science.

The last paper presented at the Wednesday session was by Robert E. Hardwicke, Fort Worth, attorney, "Legal Aspects of Gas Conservation in Oil Production," in which he stated that the oil pools should be treated as units, and operated as such, irrespective of property lines if real conservation and protection of property rights is to be effective.

Geologists and petroleum engineers can with fair accuracy determine the limits of a pool and the proportionate interests of each landowner, said Mr. Hardwicke, and he predicts that before long pools will be operated as a unit either under state compulsion or by voluntary agreement, perhaps by formation of a huge corporation in which owners of mineral estates will be stockholders.

The law of oil and gas has not kept pace with the facts and principles established by geologists and petroleum engineers, according to Mr. Hardwicke, and is not only replete with property rules based upon assumptions of fact which have been disproved, but involves inconsistent and contradictory legal principles that have played a large part in bringing the petroleum industry to instability. He held that present concern is not whether the ownership or nonownership theory is correct, but the conservation of oil and gas, and, therefore, the state may regulate operations of one or both to prevent waste.

"That we are concerned with conservation in a period of enormous overproduction seems a paradox," said Mr. Hardwicke. "But, whatever the cause, it is clear that our present law and methods of production need considerable overhauling and adjustment. The valuable function of gas in the production of oil is now fairly well understood. The courts and legislatures must find a way to reconcile conflicting property rights and interests to the end that each owner of oil and gas land may receive his fair and just share of the minerals or the value thereof, and not be permitted to operate in such manner as to injure his neighbors and destroy a large percentage of an irreplaceable natural resource."

Ratable Taking Necessary

The last speaker on the program was Wirt Franklin of Ardmore, Okla., president of the Independent Petroleum Association, who restated his position in regard to proration and emphasized the fact that he is in favor of it, or as he put it, "in favor of ratable taking of oil from an oil pool with justice to all operators and favors to none."

Mr. Franklin maintained that injustice has been done in enforcing proration rulings in all fields, both in Oklahoma and in Texas, and now that the conditions in East Texas have reached an acute stage it has served only to emphasize those conditions and call for an immediate remedy in the way of suitable laws being enacted in Texas to permit enforcement of proration rulings.

As a result of the position taken by these leaders a special association was formed on Thursday to bring about a call for an extra session of the Texas legislature and arouse public sentiment in favor of the enactment of laws that will permit the curbing of production in East Texas and thereby stabilize conditions there and bring about a return of operating conditions in all states that will permit operators to continue to produce oil at a reasonable profit.

The board of directors of the American Petroleum Institute also adopted resolutions favoring unit operation and calling upon members of the institute to refrain from indiscriminate buying of distress oil below the posted price.

Taken as a whole, this session has crystallized action on the part of large and small producer alike and out of the chaos now existing in East Texas pools will come some concrete results that should bring about a much better condition in the industry, as a whole, because it has been united under a common cause to fight against practices introduced by a few producers who have recently acquired production and are willing to sacrifice their oil at any price to meet immediate needs regardless of the results such practices will have upon the whole industry and all communities where oil is produced and refined.

SPEEDING THE JOURNAL TO SUBSCRIBERS

The following changes in the mailing schedule will be made effective with our issue of June 11, 1931. These changes will affect delivery in 16 states, with a gain of a day's time in most instances.

With these new changes, The Oil and Gas Journal should be in the reader's hands by Saturday each week, everywhere in the United States, with the one exception of Seattle, Wash. In this instance, efforts are being made to make an 8 o'clock morning train Wednesday, so that Saturday delivery can be made, thus covering the entire United States.

Actual arrival hours to some of the important points are as follows:

City—	Formerly arrived—	Will Arrive—
El Paso, Tex.	5:30 P.M. Thursday	9:25 A.M. Thursday
Salina, Kans.	4:55 P.M. Thursday	12:10 A.M. Thursday
Omaha, Neb.	6:20 P.M. Thursday	7:00 A.M. Thursday
Lincoln, Neb.	3:40 P.M. Thursday	7:50 A.M. Thursday
Denver, Colo.	7:00 A.M. Friday	1:00 P.M. Thursday
Ogden, Utah	6:20 A.M. Saturday	6:20 A.M. Friday
Kansas City, Mo.	7:35 A.M. Thursday	7:45 P.M. Wednesday
Casper, Wyo.	9:00 P.M. Friday	7:00 A.M. Friday
Duluth, Minn.	2:10 P.M. Thursday	6:30 A.M. Thursday
Minneapolis, Minn.	4:00 P.M. Thursday	8:00 A.M. Thursday
Milwaukee, Wis.	12:35 P.M. Friday	10:20 A.M. Thursday
Billings, Mont.	6:00 P.M. Saturday	6:00 P.M. Friday
Portland, Ore.	7:45 A.M. Sunday	7:45 A.M. Saturday
Seattle, Wash.	12:30 A.M. Sunday	2:20 P. M. Saturday

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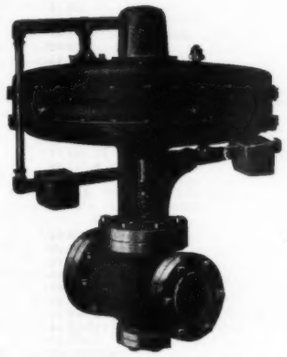

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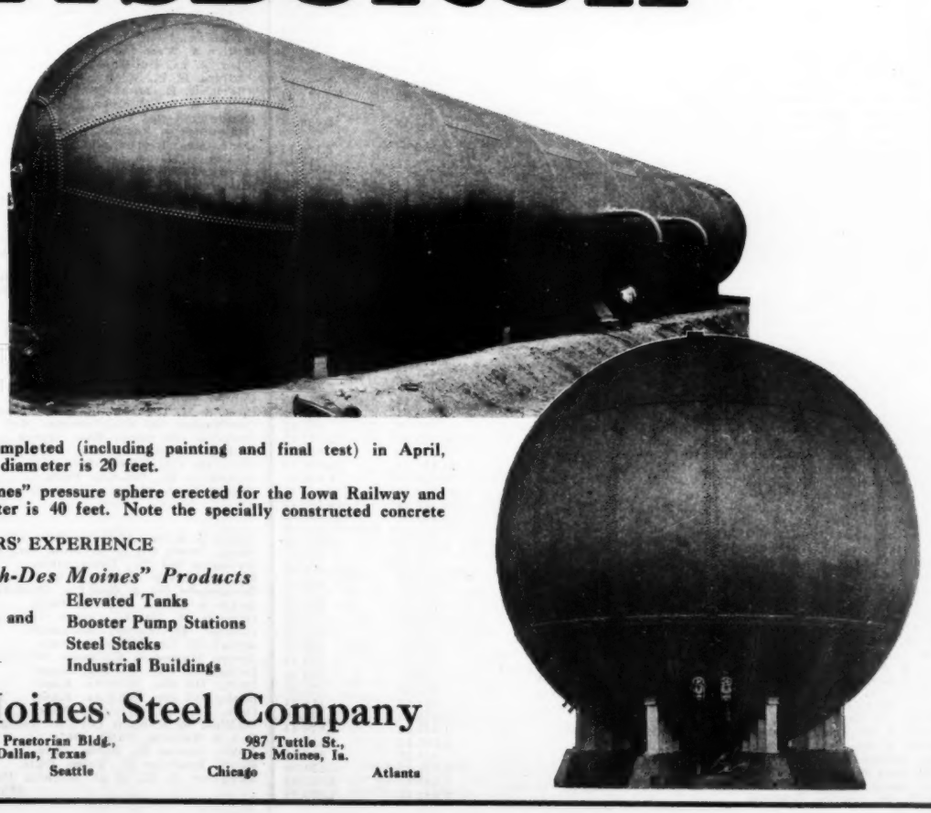

TO secure a better idea of its size, compare this big gas holder with the man's figure standing midway of its length of 110 feet.

This "Pittsburgh-Des Moines" holder was completed (including painting and final test) in April, 1931, for the City of Richmond, Virginia. Its diameter is 20 feet.

At the right is shown a "Pittsburgh-Des Moines" pressure sphere erected for the Iowa Railway and Light Corporation at Ames, Iowa. Its diameter is 40 feet. Note the specially constructed concrete foundations and steel supports.

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Texas Gross Production for First Quarter 1931

Gross receipts tax on crude oil production in Texas, quarter ending March 31, 1931:

A

Name and address—	Barrels	Value
Abercrombie, C. L., Archer City (12-1-1930 to 3-31-31)	227.60	$185.92
Adams, Harry, Co. and Walter Henshaw, Midland (12-31-30)	12,978.24	11,752.47
Amicable Life Insurance Co., Waco	386.50	311.92
Arab Gasoline Corp., Eastland	1,018.61	951.40
Acorn Oil Co., Beaumont	6,383.56	4,663.06
Arrowhead Oil Co., Dallas	1,098.48	954.76
Alamo Oil Co., Brownwood	383.00	326.00
Ada Belle Oil Co., Batson	15,892.07	11,121.14
Allday Oil Corp., Wichita Falls	390.43	218.35
Arkansas Fuel Oil Co., Shreveport, La.	545,944.00	257,951.93
Apple-Brandeberry Oil Co., Wichita Falls	8,319.18	7,605.66
Andrews, W. R., et al, Breckenridge	571.19	498.36
A. & P. Production Co., Houston	46,814.96	36,186.63
Allied Oil & Gas Co., Laredo	78,916.32	55,218.68
Art & Taxman, Wichita Falls	425.40	315.67
Allbritain, F. J., Markley	1,025.98	595.63
Akin & Rayzor, Wichita Falls	4,109.88	2,607.97
Abercrombie, J. S., Co., Houston	140,901.42	113,112.71
Ama-Gray Oil Co., Amarillo	21,029.60	12,386.91
Ames, E. W., et al, Marshall	441.94	411.29
Alaska Petroleum Co., Amarillo	125.70	73.54
Alworth-Stevens-Hild Co., New York, N. Y.	1,091.73	764.88
Adams, Harry, Co., Midland	10,933.63	8,110.14
Adamson, Peter, Jr., Tulsa, Okla.	356.00	295.80
American Maracaibo Co., New York, N. Y.	59,138.92	28,499.80
Anchor Oil Producing Co., Dallas	408.59	361.25
Anderson, G. S., Fort Worth	118,194.68	44,901.06
Andrews Petroleum Corp., New York, N. Y.	3,118.45	2,227.10
American Refining Properties, Wichita Falls	29,540.65	18,106.89
Arco Oil Co., Wichita Falls	19,559.96	12,030.03
Argus Oil Co., Inc., Austin	167.26	116.48
Atlas Production Co., Burkburnett	1,577.30	1,030.79
Adams, Dr. Walter B., Wichita Falls	326.63	228.64
Anderson-Drewery Corp., Cisco	3,168.00	2,722.27
All-American Oil & Gas Co., Oklahoma City, Okla.	1,506.84	1,147.29
Adams & Prince, Amarillo	12,009.96	7,663.58
Adams & McGahey, Amarillo	19,756.84	11,829.44
Atkinson & Sandefer Oil Corp., Breckenridge	7,388.86	7,036.62
Alamosa Oil Co., Amarillo	3,318.39	1,301.07
American Refining Properties (RMW), Wichita Falls	1,654.72	1,094.02
American Refining Properties (NBC), Wichita Falls	818.59	582.27
American Refining Properties (WMP), Wichita Falls	5,733.09	3,817.65
Ailes, J. W., Wichita Falls	713.28	413.70
Atlantic Oil Producing Co., Dallas	480,130.67	305,731.39
Artex Oil Co., Wichita Falls	548.29	528.63
Arco Oil & Gas Co., Baltimore, Md.	6,764.42	5,821.73
Amerada Petroleum Corp., Tulsa, Okla.	217,463.60	127,188.11
Arcadia Refining Co., Coleman	32,817.73	24,003.27
Amarillo Oil Co., Amarillo	1,197.75	858.76
Anderson-Prichard Oil Corp., Oklahoma City, Okla.	70.88	49.76
Abraham, Earl, Bridgetown	872.20	545.27
Adams & Lyles, Lockhart	5,006.97	4,255.92
Adams & Lyles, Lockhart	1,393.97	1,101.23

B

Bayless, A. A., Fort Worth	721.94	655.33
Brown, Mrs. Carrie L., et al, Orange	4,653.63	3,722.90
Brown, Dr. E. W., estate, Orange	3,622.39	2,897.82
Bourbon Royalty Co., Dallas	1,242.17	994.67
Bourbon Royalty Co., Dallas	3,573.35	2,631.88
Bartlett Production Co., Rockdale	449.46	376.66
Brownlee-Pope Oil Co., Austin	2,073.63	1,765.39
Brown, A. J., Fort Worth (12-31-30)	983.00	1,102.80
Bullington, O. L., Wichita Falls (12-31-30)	350.23	364.83
Boddy-Bevering Oil Corp., Henrietta	624.25	604.50
Butler & McAlister, Olney	261.00	271.70
Biggs Oil & Gas Co., McKinney	772.00	613.67
Barnes, J. B., Electra	7,186.11	4,984.85
Bohner, C. F., Kansas City, Kans.	145.48	101.61
Blue Bonnet Petroleum Corp., Somerset	633.44	393.57
Bowman Oil Co., Rockdale	396.27	329.90
Bryson Oil & Gas Co., San Angelo	3,327.11	3,197.19
Britton, Ed S., trustee, Strawn	513.00	457.53
Britton & Gordon, Strawn	647.23	606.85
Burton McKee Oil Corp., Strawn	395.55	344.55
Braden Co., an express trust, Tulsa, Okla.	3,074.94	2,735.18
Borealis Oil Co., Oklahoma City, Okla.	3,055.83	2,771.01
Baker, James Blair and C. F. Camp, trustees, W. T. Waggoner "B" lease, Wichita Falls (12-31-30)	15,994.13	15,036.01
Baker, James Blair, Jr. and C. F. Camp, trustees, "C" lease, Wichita Falls (12-31-30)	2,320.99	2,129.15
Baker, James Blair, Jr., "F" lease, Wichita Falls (12-31-30)	4,146.49	3,710.13
Baker, James Blair, Jr. and W. B. Omohundro, Wichita Falls (12-31-30)	860.88	845.59
Baird Oil Co., Putnam (12-31-30)	64.62	64.66
Burk Burnett, Jr., Oil Co., Fort Worth (third and fourth quarters, 1930)	379.87	411.91
Bashara & Bashara, Waco (1-1-30 to 6-30-30 inc.)	214.90	235.40
Big Lake Oil Co., Pittsburgh, Pa. (12-31-30)	1,433,929.15	1,521,091.60
Bearman, J. A., et al, Cisco	8,119.36	10,043.66
Burns, L. T., Wichita Falls	44,498.22	35,597.16
Booth, C. H., trustee, and A. F. Priesmeyer, trustee, M. V. Lawrence "B", Taylor (12-31-30)	3,616.72	2,350.87
Booth, C. H., trustee, and A. F. Priesmeyer, trustee, M. V. Lawrence "B", Taylor (12-31-30)	3,261.45	2,119.94
Bluebonnett Oil Co., Wichita Falls	453.77	329.38
Beame, Drew, Okmulgee, Okla.	2,531.76	2,260.50
Baker, Mollie B. and Fred R., Breckenridge	461.90	438.00
Baker, J. F. and H. E., Breckenridge	2,006.00	1,734.61
Baker, J. A. and Mollie B., Breckenridge	6,174.42	4,517.45
Barbara Oil Co., Chicago, Ill.	1,334.93	1,230.75
Bartlett, William, & Co., Gerald L. Coffey, receiver, Electra	496.07	406.07
Brown, H. L., Fort Worth	16,149.93	12,013.35
Baldwin, F. C., Inc., et al, Fort Worth	1,223.69	919.01
Buchanan, A. A., San Antonio	34,453.75	35,520.44
Bass & Dillard, Wichita Falls	2,026.59	1,418.63
Boller, C. W., Wichita Falls	12,584.50	10,042.67
Bonner, Co., The, Wichita Falls	14,456.24	10,796.44
Bohner, C. J., Oil Corp., Burkburnett	15,189.09	11,098.00
Bohner, Crenshaw & Whitehill, Burkburnett	7,321.93	5,865.59
Bohner, C. J., et al, Burkburnett	5,291.64	3,855.06
Bynum & Palmer, Rockdale	137.85	113.62
Big Lake Oil Co., Pittsburgh, Pa.	1,461,261.04	1,122,666.93
Boardman & Ulrich, Corsicana	1,582.23	996.66
Bynum, W. W., estate, Rockdale	742.90	627.54
Bashara, M. J., & Sons., Wichita Falls	899.81	575.03
Badger Oil Co., Amarillo	6,759.73	4,379.04
Byrd, W. E., Daisetta	478.13	361.39
Bruce, A. D., Brownwood	245.21	197.88
Baker, J. A., Breckenridge	1,033.36	915.33
Bailey & Gilliland and Mrs. Fannie Bailey, Wichita Falls	1,133.23	869.96
Big State Oil Corp., Houston	927.40	781.92
Butler & McAlister, Olney	242.13	188.81
Bridwell Oil Co., Wichita Falls	73,675.42	53,435.29
Bridwell & Heydrick, trustee, Wichita Falls	1,530.56	1,070.44
Bridwell & Mayfield, Wichita Falls	3,287.10	2,622.16
Beggs, George-Strip, Fort Worth	818.25	848.13
Bailey, Carl B., Wichita Falls	6,898.82	5,571.09
Brown Farm Oil Co., Wichita Falls	1,430.94	1,105.89
Bolin, D. H., trustee, Graham	8,692.49	6,084.74
Barnsdall Oil Co., Tulsa, Okla.	56,861.87	41,155.71
Brady Bros., Minerva	544.19	442.60
Brazos River Gas Co., Wichita Falls	291.80	195.49
Baker & Pardue, Breckenridge	6,144.13	5,573.84
Benedum-Trees Oil Co., Pittsburgh, Pa.	4,549.34	3,163.21
Burns, L. T., Wichita Falls	832.80	560.12
Brown & Lickey, Wichita Falls	631.13	446.95
Black Cat Oil Co., Tyler	860.33	639.54
Bell Oil & Gas Co., Tulsa, Okla.	5,945.27	3,588.77
Bristow, J. E., et al, San Angelo	675.46	513.53
Brown & Guinn, Wichita Falls	244.35	180.07
Barnum Oil Co., Borger	1,141.06	636.68
Barnum Oil Co., Borger (9-30-30)	777.48	641.04
Barnum Oil Co., Borger (12-31-30)	729.92	497.09
Black, W. A., Midland	902.68	657.34
Bowers Oil Co., Vernon	758.02	591.66
Burkburnett Production Oil Trust, Baltimore, Md.	897.49	671.63
Big Indian Oil & Development Co., Gainesville	760.36	813.58
Bernice Oil Co., Saratoga	7,132.86	4,101.27
Brazelton Brothers & Williams, Graham	1,151.25	792.67
Bridwell, W. H., Rockdale	6,481.11	4,038.78
British American Oil Producing Co., Tulsa, Okla.	72,164.71	52,065.62
Big Gray Oil & Gas Co., Amarillo	8,211.08	5,683.71
Bexata Oil Co., San Antonio	956.63	631.25
Brannon & Murray, Cisco	357.85	278.09

C

Clark, A. R., Kansas City, Mo.	228.93	208.33
Crosbie, J. E., Inc., Tulsa, Okla.	537.93	247.45
Champlin Refining Co., Enid, Okla.	107,550.10	65,322.24
Campbell, R. S., Humble	966.86	744.60
Canary, S. C., et al, Tulsa, Okla.	350.08	314.91
Connell-Wixson-Frazier, Eldorado, Kans.	658.73	415.00
Clark, C. W., Wichita Falls	5,667.73	3,638.95
Consolidated Oil Co. of Texas, Wichita Falls	84,520.51	59,727.16
Cohen, Aaron, Baltimore, Md.	5,381.27	4,897.60
Cranfill-Reynolds Co., Houston	425,197.53	324,958.94
Coppock & Coleman, Iowa Park	10,636.12	8,660.46
Cezeaux, P. C., Humble	5,836.00	4,880.60
Cranfill Brothers Oil Co., Wichita Falls	4,177.18	3,342.62
Cole, W. C., Wichita Falls	1,139.72	827.64
Curtis, James A., Wichita Falls	1,252.81	845.28
Cooper, G. W., et al, Wichita Falls	1,269.32	868.52
Cooper & Mishler, Wichita Falls	1,963.33	1,389.98
Carey, C. W., Wichita Falls	6,666.91	4,512.88
Cole Petroleum Co., Laredo	11,161.48	7,701.42
C. P. Oil Co., Henderson	32,465.88	10,650.86
Chapman, E. L., Fort Worth	173,079.46	106,378.34
Collie, Ben F., Breckenridge (2-1-29 to 12-31-30 inc.)	7,885.33	10,421.12
Caudle, Fifer, Rockdale (1-1-30 to 12-31-30 inc.)	1,141.00	1,188.16
Connell-Wixson-Frazier, Eldorado, Kans. (12-31-30)	941.97	857.19
Camp Oil & Gas Co., Wichita Falls	504.87	403.56
Condor Petroleum Co., Abilene	3,800.03	2,701.09
Cardinal Oil Co., San Angelo	51,037.16	35,806.99
Carey, E. S., et al, Wichita Falls	56.24	25.31
Carey, E. S., et al, Wichita Falls	326.65	263.72
Culbertson Co., Wichita Falls	7,419.32	5,323.02
Callihan, George, and Carter Dev. Co., Fort Worth	1,096.06	914.25
Callihan, George, and Carter Dev. Co., Fort Worth	367.78	299.96
Claggett & Evans, Mirando City	746.37	671.73
Cox, Edwin B., Ardmore, Okla.	1,358.79	1,135.33
Castleberry, S. A., Vernon	207.17	191.03
Cooper Petroleum Co., Houston	2,110.60	1,371.89
Cushing Refining & Gasoline Co., Cushing, Okla.	9,518.83	5,167.11
Cable Oil Co., Wichita Falls	7,723.34	4,321.45
Coffield & Hale Oil Co., Rockdale	1,089.90	1,074.37
Crown Oil & Refining Co., Houston	12,902.39	10,321.91
Crown Central Petroleum Corp., Houston	38,510.68	26,913.46
Central Oil Co., Cameron	2,486.09	2,005.97
Clarkson, William, Jr., Houston	4,703.68	4,192.42
Cosden, J. S., Inc., Fort Worth	5,447.99	3,579.23
Canyon Oil & Gas Co., Inc., Cross Plains	205.27	169.60
Clem Oil Co., Houston	346.04	162.08
Crabb & McNeel, San Angelo	585.80	536.44
Cullen, H. R., et al, Houston	5,512.00	4,023.76
Continental Oil Co., Ponca City, Okla.	1,649,121.30	1,071,014.55
Cullen & West Production Co., Houston	20,758.37	21,560.45
Clay, J. D., Houston	3,059.78	2,377.48
Cullum, F. P., Wichita Falls	13,579.99	8,937.02
Clark, R. R., et al, Wichita Falls	31,725.67	25,286.62
Clark, R. R., Wichita Falls	10,540.48	8,613.65
Capitol Oil Co., Orange	448.54	317.25
Cashdollar & Snyder, Brownwood	146.50	141.52
Cuno, Mrs. Bertha, Moran	1,490.27	1,303.20
Collins, J. L., & Co., Corsicana	27,911.02	17,242.84
Conway Brothers, Ranger	3,706.14	3,587.39
Chenault, W. L., Amarillo	439.80	281.77
Corzelius Brothers & Taggart, Eastland	912.47	861.99
Church & Weekley, Fort Worth	33,165.53	18,743.33
California Co., The, Dallas	1,423,929.00	848,351.37
Coline Oil Corp., Oklahoma City, Okla.	1,824.46	1,697.52
Corbett, J. Q., & R. V. Tidwell, Graham	488.55	365.61
Clear Lake Oil Co., Rockdale	601.82	498.85
City National Bank, Wichita Falls	927.10	851.42
City National Bank, Wichita Falls	2,777.52	3,912.99
Collie, Ben F., Breckenridge	733.37	629.73
Caruthers Co., San Antonio	1,248.78	775.52
Comet Petroleum Co., Fort Worth	2,822.81	1,606.67
Campbell, Alma, Fort Worth	345.81	305.68
Craig & Lowrie, Pittsburgh, Pa.	1,032.86	526.30
Christie Brothers, Wichita Falls	10,847.61	9,571.39
Clayton Key Oil & Gas Co., Amarillo	2,613.82	1,912.23
Conner Son & Cloughley, Gotebo, Okla.	8,530.44	7,896.47
C. R. & M. Drilling Co., San Antonio	34,536.18	37,193.26
Cornhusker Oil Co., Lincoln, Neb.	1,566.39	1,080.81
Corvette Oil Corp., Fort Worth	10,743.93	5,590.25
Culbertson Brothers Co., Fort Worth	4,523.55	1,130.89
Cisco Oil Co., Tulsa, Okla.	16,274.57	12,244.97
Cotton, J. H., Wichita Falls	697.31	534.67
Campbell, J. M., San Antonio	9,472.58	6,199.25

D

Dorris & Kurtz, Wichita Falls (12-31-30)	2,043.63	2,588.49
Dixon Creek Oil & Refining Co., Amarillo	118,336.77	159,921.86
Devonian Oil Co., Tulsa, Okla.	15,693.22	10,422.09
Dye & Gillette, Tulsa, Okla.	1,705.93	1,694.25
Developers Oil & Gas Co., Wichita Falls	478.00	374.24
Davis & Kurtz, Wichita Falls	444.20	313.78
Driscoll, R., Estate, Corpus Christi	27,013.20	18,936.24
Deutser, B., trustee, Beaumont	154.44	106.56
Duval Oil Corp., San Antonio	40,033.32	27,748.10
Derby, Haines & Williams, Wichita, Kans.	501.93	125.09
Derby Oil Co., Wichita, Kans.	3,502.50	1,960.15
Derby Oil Co., Wichita, Kans.	6,944.18	3,488.32
Derby Oil Co., Wichita, Kans.	297.42	76.87
Dale, Jack B., Wichita Falls	3,310.49	2,527.53
Duffield & Howard Oil Co., Tulsa, Okla.	607.39	321.23
Dye & Gillette, Tulsa, Okla.	5,361.16	3,804.10
Davis, Louise R., Tulsa, Okla.	1.43	1.16
Davis, Beatrice H., Tulsa, Okla.	1.43	1.16
Dunaway, J. E., et al, Wichita Falls	2,342.70	1,364.22

(Continued on Next Page)

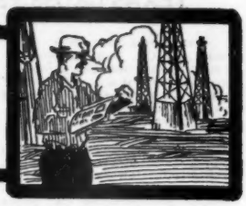
TEXAS GROSS PRODUCTION, FIRST QUARTER, 1931

Name and address—	Barrels	Value
Deako Oil Co., San Antonio	5,208.04	3,641.18
D & L Production Co., Houston	23,823.02	22,172.41
Dale-Knotts Oil Co., Wichita Falls	249.40	205.11
Dalton, Jack, Oil Co., Mineral Wells	739.04	676.02
Davis Oil Corp., Vernon	30,505.05	22,928.67
Dale Crawford Oil Co., Electra	613.28	487.25
Danciger Oil & Refining Co. of Texas, Fort Worth	471,677.72	259,477.67
Deep Rock Oil Co., Fort Worth	271,217.21	130,993.13
Dennis, J. S., Moran	1,581.73	1,289.91
Dash Production Co., San Antonio	65,695.56	67,370.33
Duquesne Oil Corp., Eastland	562.38	470.13
Douglas Brothers Oil Co., Electra	1,595.45	1,312.28
Douglas Brothers & Johns, Electra	342.63	278.45
Daniel Drilling Co., Wichita Falls	1,718.75	1,352.99
Douglas Production Co., Electra	1,331.81	1,024.19
Darby Petroleum Corp., Tulsa, Okla.	30,072.59	20,201.50
Dean Oil Co., Burkburnett	302.98	192.39
Deering, John A., Houston	27,486.66	23,506.66
Dunigan Brothers, Breckenridge	3,913.00	2,526.90
Delmar Oil Co., Bartlesville, Okla.	38,296.11	26,104.80
Dominion Oil Co., Tulsa, Okla.	516.44	373.90
Derose Oil & Gas Co., Amarillo	21,686.34	13,996.07
E		
Eubank, R. O. and B. K., Coleman	210.00	165.90
Eriewine, A. J., et al, Wilson, Okla.	1,310.97	985.31
Electra Production Co., Inc., Electra	942.66	710.37
East Batson Oil Co., Batson	12,550.87	8,745.86
Engel, E. A., Albany	2,608.00	2,485.43
Edmondson, J. M., San Antonio	1,124.29	723.98
Ernest Oil Co., Rockdale	71.07	61.12
Ellis & DuBose, Fort Worth	1,413.24	744.52
Eppenauer, E. L., trustee, Fort Worth	1,166.59	1,047.53
Edwards, R. J., Oklahoma City, Okla.	281.38	257.82
Edwards, R. J., Oklahoma City, Okla. (12-31-30)	231.60	267.40
Erie Investments, Ltd., of Texas, Toronto, Canada	403.44	341.61
Eastland Oil Co., Fort Worth	38,129.23	24,735.12
Estelle Oil Co., Beaumont	775.00	620.00
Easton, E. S., Wichita Falls	905.91	709.63
Ellis & Lancaster, Beaumont	217.93	174.35
Eddy Oil Co., Beaumont	1,096.00	876.86
Eddingston, A. T., Port Arthur	900.00	558.00
East Texas Refining Co., Dallas	76,158.00	21,895.42
El Rio Oil Co., Amarillo	280.73	160.13
Eddleman & Payne, Inc., Wichita Falls	3,633.94	2,827.51
Emerald Oil Co. of Texas, Winfield, Kans.	5,174.57	3,060.77
Empire Gas & Fuel Co., Maine, Bartlesville, Okla.	365,084.28	280,387.32
Easter Oil Corp., Wichita Falls	20,550.77	15,164.68
Ewmo Oil Corp., Abilene	689.90	423.64
F		
Freeman-Hampton Oil Corp., Wichita Falls	5,856.05	4,295.71
Fresno Oil Co., Burkburnett	28,382.46	19,186.54
Farish & Ireland lease, Houston	5,831.09	4,732.31
Floyd, K. J., Glendale, Calif.	193.59	162.47
Fraser, H. H., Wichita Falls	10,835.39	8,711.90
Ferguson, W. R., Wichita Falls	578.45	384.08
Fisher, J. A., Wichita Falls	640.86	495.55
Fullerton, W. R., Wichita Falls	1,065.07	686.51
Fort Bend Oil Co. et al, Houston	20,882.94	17,650.99
Fort Bend Oil Co., Houston	14,858.03	11,085.74
Flynn, W. B., Inc., Beaumont	4,123.32	3,111.59
Fults, W. B., et al, Graham	2,000.33	1,938.91
Fountain Production Co., Saratoga	972.51	670.34
Falls Production Co., Wichita Falls	3,716.79	3,385.22
Fox, Perry L., and William R. Thorsen, Mertzon	578.72	428.26
Ferguson & Watson, Electra	963.27	757.84
Fulton, Tom, Wichita Falls	432.55	281.38
Fariyn Oil Co., Houston	4,747.18	2,797.03
Fleming & Kimbell, Fort Worth	3,787.02	2,252.30
F. H. E. Oil Co., Fort Worth	12,078.82	9,075.34
Farmers State Bank, Burkburnett	703.62	482.44
Fain-McGaha Oil Corp., Wichita Falls	175,246.44	132,756.98
Federated Oil Co., Wichita Falls	39,268.16	15,848.26
Faith Oil Corp., Wichita Falls	922.76	694.95
French Oil Corp., San Antonio	14,850.21	10,360.15
Foster Barnsley Syndicates, Inc., Laredo	3,367.08	2,191.07
Franklin, Wirt, Ardmore, Okla.	132.08	108.78
Four Oil Co., The, Wichita Falls	733.24	533.04
G		
Graham, Charles, Myro	609.50	371.54
Goodwin, P. B., trustee, Breckenridge	2,427.48	1,319.14
Graham & Harrison, South Bend	4,311.43	4,014.16
Goldsmith, N. D., Olney	4,213.91	2,736.21
Group No. 1 Oil Corp., Fort Worth	844,949.27	640,425.07
Gulf Production Co., Houston	5,698,388.00	3,894,881.44
Gorsuch Oil Co., Abilene	2,110.19	1,229.06
Gillette, C. W., and J. J. Culbertson, Tulsa, Okla. (12-31-30)	210.33	441.30
Galvez Oil Corp., Tulsa, Okla.	2,002.20	1,763.54
Gilliland-Rosser Oil Co., Wichita Falls	484.18	328.05
Gilliland, C. W., Wichita Falls	1,588.68	1,224.63
Granite Oil & Gas Co., Ridgway, Colo.	259.50	198.81
Grayburg Oil Co., San Antonio	143,573.21	92,201.19
G & K Production Co., Fredericksburg	1,005.81	687.44
Gwynn, P. F., Wichita Falls	13,863.55	8,649.44
Gwynn, P. F., et al, Wichita Falls	1,132.89	793.00
Gwynn-Boyd Drilling Co., Wichita Falls	722.42	725.94
Green, W. J., Wichita Falls	879.25	549.14
Gardner, Wilson & McCaldin, Wichita Falls	704.95	549.10
Golden West Oil Co., San Antonio	17,579.18	12,166.45
Golding & Cochran, Wichita Falls	31,184.66	23,948.59
Gates Oil Co., San Antonio	990.46	555.53
Golding, Dudley S., Wichita Falls	16,913.05	10,945.25
Goodwin, P. B., et al, Breckenridge	215.00	118.00
Gillmon Brothers, Amarillo	564.84	345.74
Green Production Co., G. R. Thomas, receiver, Fort Worth	39,298.02	24,532.33
Gibson Oil Corp., Amarillo	16,904.45	10,164.06
Grisham-Hunter Corp., Abilene	2,246.45	1,945.84
G-I Oil Co., Wichita Falls	4,398.17	3,056.40
Gates Oil Co., Ardmore, Okla.	2,230.60	2,031.18
Gallagher & Lawson, Cisco	169.47	150.84
Gunn Production Co., Cross Plains	548.00	525.79
Gilman, R. F., and J. L. McMurray, Cisco	4,442.72	4,062.08
Gandy & Peyton, Corsicana	1,534.00	1,257.60
Gibson & Cardwell, Wichita Falls	418.00	582.62
Gibson & Cardwell, Wichita Falls	495.89	363.66
Gatlin Oil Co., San Antonio	2,802.16	1,956.52
Gilman & Conway Brothers, Ranger	2,884.07	2,698.25
Godfrey, F. L., Enid, Okla.	32.09	30.51
Grady, Mary E., Electra	334.32	237.56
Grady, D., fee, Electra	559.05	452.22
Glenridge Oil Corp., St. Louis, Mo.	3,018.98	3,038.56
Glass Brothers, Rosebud	452.16	353.24
Gilbert Co., Beaumont	4,067.00	2,830.72
Gordon Oil Co., Logan, Ohio	81.52	82.34
Grand Falls Oil Co., Big Spring	1,780.39	1,349.45
Grassroots Oil Co., Fort Worth	697.58	533.71
Gaither Production Co., Rockdale	536.54	458.61
Gray & Adams, Inc., Gainesville	1,421.39	901.78
Guthrie, Cole & Ferguson, Wichita Falls	430.66	239.03
Gordon & Morris, Breckenridge	708.11	651.46
Ginter Jones Oil Co., Nacogdoches	353.77	252.39
Ginter Lange Oil Co., Nacogdoches	1,180.81	876.14
Gholson, John M., Ranger (1-1-30 to 12-31-30)	13,977.74	17,942.66
Gates-Bacon-Lea, Wichita Falls	3,951.94	2,760.50
Godley Oil & Gas Co., Dallas	17,915.35	11,535.49
Gordon, Ann B. Oil Co., Inc., Dallas	1,914.77	1,852.16
Green & Owens, Brownwood (12-31-30)	297.00	417.28
Gladis Oil Co., Saratoga	2,074.16	1,214.77
H		
Halliday, H. J., Beaumont (12-31-30)	1,456.80	1,463.61
Hobson & Voorhees, San Antonio (12-31-30)	411.34	484.90
Huey, Ora, Borger (12-31-30)	1,222.58	1,051.42
Hutcheson, Frank, Archer City (12-31-30)	890.00	1,061.36
Hamm, Homer, Henrietta (12-31-30)	215.39	211.07
H. A. M. Oil Co., Chicago, Ill. (5-1-30 to 7-31-30)	4,524.94	5,664.98
Hutchinson Drilling Co., Borger (12-31-30)	1,178.57	1,085.83
Hammond, J. G., Tulsa, Okla. (12-31-30)	130.24	166.95
Handrick, August, Moran	130.60	94.68
Hitchman & Howard, Inc., San Antonio	1,670.51	1,167.50
Harrison Oil Co., Houston	68,016.51	71,372.57
Hyde & James, Albany	379.70	336.78
Hefley, McIntosh & Thomas, Cameron	489.99	373.71
Hobson & Voorhees, San Antonio	496.81	347.20
Hamilton & Martin, Wichita Falls	378.84	288.78
Home Oil & Gas Co., Inc., Albany	1,561.39	1,305.08
Houghland Production Co., Dallas	1,534.40	963.97
Hughes, J. K., Oil Co., Mexia	14,360.33	12,230.17
Hanlon Gasoline Co., Tulsa, Okla.	1,170.34	1,020.68
Hedrick-Camp Drilling Co., Wichita Falls	1,698.90	1,098.96
H & H Drilling Co., Seminole, Okla.	408.00	292.62
H & H Drilling Co. and J. L. Douglas, Albany, Tex., and Seminole, Okla.	893.50	709.77
Hamill & Hamill, Bay City	2,918.86	1,871.76
Hadlock Oil Corp., El Paso	640.51	345.59
Holloway, R. R., receiver, Brownwood	903.98	900.35
Hynds & Parker, Graham (12-31-30)	642.08	725.55
Holloway, R. R., receiver, Brownwood (12-31-30)	854.76	931.76
Hodges, F. M., Wichita Falls	154.97	164.93
Hammond & Waggoner, Wichita Falls (12-31-30)	1,448.63	1,520.05
Hawkins, W. L., Wichita Falls	1,848.82	1,447.37
Hope Oil & Gas Co., Fort Worth	9,869.36	8,923.94
Herring, S.C., Brownwood	701.00	714.31
Hamilton, W. L., Bridgetown	497.42	399.46
Hoffman & Page Co., Eastland	22,538.98	20,625.78
Hemby, J. M., Electra	873.29	680.34
Herrogan Oil Corp., Pampa	10,549.30	5,721.81
Howard Petroleum Corp., Tulsa, Okla.	872.07	465.75
Houston Gulf Gas Co., Houston	6,643.62	5,084.30
Halcombe, Thomas, Wichita Falls	1,839.71	1,283.36
H-Y Oil Co., Inc., Fort Worth	13,344.63	10,022.81
Helvetia Oil Co., San Antonio	10,002.50	6,827.50
Horn, T. W., Houston	455.16	354.49
Harper Petroleum Corp., Bryson	12,830.30	12,303.19
Humble Oil & Refining Co., Houston	6,473,850.55	4,872,825.37
Herbert Oil Co. of Texas, Fort Worth	4,371.84	3,815.35
Hamilton, Walter R., trustee, San Antonio	3,578.64	2,793.12
Houston Oil Co. of Texas et al, Houston	832,612.12	549,423.65
Howard, Duffield & Berlin, Tulsa, Okla.	1,059.17	547.55
Harrell, J. T., Wichita Falls	1,616.09	1,110.25
Hinson, G. D., and R. V. Tidwell, Graham	4,736.98	4,437.86
Hickel, J. T., et al, Corsicana	61.18	61.79
Houston Producing Co., Houston	42,986.31	36,353.18
Hunter Oil Corp., Chicago, Ill.	14,868.30	12,436.02
Heidrich, E. C., Jr., Amarillo	1,652.30	974.12
Hunt, H. L., trustee, Henderson	53,284.57	22,066.27
Hynes, F. P., et al, San Antonio	10,819.07	7,893.89
Hunter, T. F., Wichita Falls	14,995.81	12,352.50
Hull, L. V., Wichita Falls	4,470.68	3,436.69
Hill & Dowell, Batson	9,282.65	6,539.86
Halmack Oil Co., Dallas	159.17	200.83
Hyer, Fred, Fort Worth	12,466.13	7,216.88
H. H. Drilling Co. and Douglass, Moran	597.88	431.99
Hoppes, W. T., Burkburnett	557.15	424.69
Hoppes, W. T., Burkburnett	29.29	23.13
Haynes Drilling Co., Shreveport, La.	189,223.46	85,150.56
Hobbs, Ferguson & Neeley and Addison H. Gibson, Tulsa, Okla.	11,727.13	8,165.60
Humphreys Corp., Houston	396,730.64	322,352.23
Harris & Simons, Tulsa, Okla.	2,867.20	1,709.74
Holbrook & Woods, Wichita Falls	4,926.35	3,263.13
Harwell, E. P., Tulsa, Okla.	721.64	599.71
Huey, Ora, Borger	976.82	562.85
Hines, Harry, Wichita Falls	1,724.20	1,238.25
Holmes Brothers, Amarillo	14,146.40	9,562.62
Holmes, Hill, Seibold & Holmes, Amarillo	11,761.56	6,494.60
Holmes, W. H., and W. W., Amarillo	3,022.58	1,923.54
Holmes Brothers, Moore, Amarillo	3,861.90	2,424.37
Humber, J. M., Petroleum Co., Borger	15,980.40	8,917.06
Hawley, J. A., Ottawa, Ontario, Canada	165.33	145.34
Hardie, J. M., & Co., Sour Lake	62.14	42.88
Hayes, Reese L., Wichita Falls	1,498.00	1,248.66
Hayes, Reese L., Wichita Falls	1,240.46	704.80
H. B. J. Oil & Gas Trust, Baltimore, Md.	1,369.84	1,100.89
Hambleton, George, San Antonio	366.02	246.42
Hardy Oil Co., Wichita Falls	1,529.28	1,047.42
Hamilton, W. B., Wichita Falls	146,175.86	69,539.55
Hammon, W. H., Wichita Falls	15,905.18	12,762.02
Hammon & Heyser, Wichita Falls	8,870.85	7,112.00
Hobbs Oil Co., Tulsa, Okla.	1,218.19	931.51
Hays, F. C., trustee, Tulsa, Okla.	1,393.72	1,304.78
Hamon, Jake L., Ardmore, Okla.	21,028.73	19,538.42
Hickory Oil & Gas Corp., Fort Worth	4,724.84	4,686.79
Hemisphere Oil Corp., New York, N. Y.	11,140.10	6,888.88
Hoffman, P. L., Cisco	6,919.73	4,434.68
Hammond & Waggoner, Wichita Falls	425.37	301.63
H. H. Drilling Co. and J. L. Douglas, Seminole, Okla., and Albany, Tex.	893.00	697.88
I		
Investors Oil & Gas Co., Sioux Falls, S. D. (12-31-30)	1,263.18	1,482.17
Isaacs, B. K., receiver J. K. Hughes Development Co., Fort Worth (12-31-30)	487.57	458.02
Irick Oil Co., Waskom (12-31-30)	149.80	146.80
Irick Oil Co., Waskom	314.14	252.75
Investors Oil & Gas Co., Sioux Falls, S. D.	1,011.38	994.15
J		
Jones, Hugh, Burkburnett (12-31-30)	3,013.00	3,019.45
Jones, W. A., Minerva	240.65	171.88
Jason Oil & Gas Co., Inc., Houston (12-31-30)	78.15	78.93
Janellen Oil Co., Tulsa, Okla.	147.60	103.45
Jones, Edwin M., San Antonio	517,056.39	290,627.39
Johnson Brothers, San Antonio	5,119.03	3,751.40
Jones, O. P., and C. J. Oates, Amarillo	540.00	324.00
Jones, J. A., Moran	145.58	122.78
Julia Oil Co., Sour Lake	3,066.17	2,127.11
Jonray Oil Co., San Antonio	1,864.38	1,177.88
Justin Oil Corp., Wichita Falls	5,633.62	4,227.44
Jones, J. E., Wichita Falls	2,547.13	1,807.47
Jackson, T. H., Sipe Springs	59.27	54.18
Jones, Hugh, Burkburnett	2,379.83	1,692.53
Jacob Oil & Gas Co., Graham	4,059.58	2,653.82
Jackson, J. S., trustee, Sour Lake	2,595.27	1,790.74
Judson Oil Co., Tulsa, Okla.	5,869.29	4,547.90
James, Tom, Albany	3,619.73	3,334.32
James & Klinger, Albany	622.50	466.87
Johnson Oil Co., Wichita Falls	47,822.55	54,093.39
K		
Kiemcke, George, trustee, Von Ormy (12-31-30)	1,452.90	1,149.66
Kavanaugh Petroleum Co., Houston	1,704.32	1,291.66
Kiser & Fleming, Albany	2,225.61	1,351.74

(Continued on Page 130)

CLASSIFIED WANTS

Read by Oil Men Everywhere



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	1 time	2 times	3 times	4 times
3 lines	1.05	1.80	2.55	3.30
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5 lines	1.75	3.00	4.25	5.50
6 lines	2.10	3.60	5.10	6.60
7 lines	2.45	4.20	5.95	7.70
8 lines	2.80	4.80	6.80	8.80
9 lines	3.15	5.40	7.65	9.90
10 lines	3.50	6.00	8.50	11.00

Compute white space at the above rates.

For rates on Classified DISPLAY see opposite page.

Mail your Classified Advertisement to

THE OIL AND GAS JOURNAL
Tulsa, Oklahoma

EQUIPMENT WANTED

AM IN THE MARKET for standard steel 84 foot drilling rig and heavy duty rotary steel drilling rig. Also both standard and rotary drilling tools. Also casing in all sizes from 20" to 5½". Also steel tanks of various sizes. All equipment must be first class and very cheap. Address Box 467, Red Cloud, Nebraska.

WANT TO RENT, OPTION TO BUY Sullivan core drill or light rotary. State lowest price and location. Geologist, 8203 N. Thirtieth St., Omaha, Nebr.

WANTED BY TANK DEALER—Second hand bolted steel tanks and oil soaked wood tanks. Must be in good condition. Truman McPhail, Tyler, Tex.

WILL BUY APPROXIMATELY 50 miles of good used 5 or 6-inch line pipe. Might use 5⅛ or 6⅝-inch lapweld casing if in condition to use as line pipe. Give location, condition and price.
THE BRIDGEPORT MACHINE CO., Wichita, Kans.
Attention: Mr. A. A. Buschow. L.D. 59.

WANTED TO BUY No. 2-A or 3 Steel National Drilling Machine complete. Must be in A-1 shape. Address Box 292, Duncan, Okla.

FOR SALE—EQUIPMENT

FOR SALE FOR LEASE
Four 10,000-gals. tank cars coiled. 50 ton trucks. Victor Car line, 111 West Jackson Blvd., Chicago, Ill.

FOR SALE for a low price. A gasoline powered Sullivan Diamond Core Drill. Write Box E-492, The Oil and Gas Journal, Tulsa, Okla.

SPECIAL BARGAINS
Factory Rebuilt Star Drilling Machine—Steam or Gasoline Power—Tractor and non-tractor types. Greatly reduced prices. THE STAR DRILLING MACHINE CO. Akron Ohio, or Chanute, Kansas.

FOR SALE — Slightly used Ingersoll-Rand steam two stage, 250-pound air compressor. Piston displacement. 312 cubic feet per minute at 200 r.p.m. Complete with intercooler and receiver. Write Box E-456, The Oil and Gas Journal, Tulsa, Okla.

HOTELS

HOTEL CUSHING
Cushing, Oklahoma
"Where Oil Men Meet"
Modern, Fireproof, Coffee Shop.

NEW BRADY HOTEL, TULSA, OKLA.
Tom Wilson, Mgr.
Fireproof, remodeled, new management. Free parking. Prompt, courteous service. Rates $1.00 up. Private baths $1.50.

HOTEL HAWLEY
McPherson, Kansas.
"The Oil Men's Home"
Modern fire-proof Hotel. Rooms $1.50 up.

BUSINESS OPPORTUNITIES

DEEDED MINERAL interest spread covers 6 tracts one under 5,000 barrel well in Rusk County new field. Write for map. ¼ mineral rights 142 acres Bee County 1,200 feet from 450 barrel well $250.00 basis. 7,905.5 acres new 10 year paid up lease ¼ royalty same term Edwards County, Texas, in active line of play $1.25 acre. Stieren & Koenig, Alamo National Bldg., San Antonio, Texas.

WANT TURNKEY BID on 2,500-foot test well, eastern Nebraska. Petroleum Producers, Inc., 800 First National Bank, Omaha, Nebr.

$12.50 BUYS DEED part oil, 2 Oil Royalties City Pool. Ed Milam, Dept P., Oklahoma City, Okla.

IF YOU are interested in purchasing production in Kansas and are able to take advantage of an unusual opportunity, address Harvey L. Songer, Oil Investments, Eldorado, Kans.

OIL located before drilling. Geophysical method. Toggodometer Instrument; take pay in oil. No oil, no pay, except traveling and testing expenses, 95 per cent accuracy. O. P. Coffin, Caddo, Tex.

CONCERNS Willing to pay thousands of dollars for useful patents. Send $1 for list of things to invent and start on the road to fortune. A. T. Downing, 18 Greenough Ave., Boston, Mass.

OWN 700-BARREL REFINERY, new process and a proven success, unlimited possibilities. Will trade interest in refinery for interest in production and move refinery to location. Prefer New Mexico. Write J. L. Havins, Box 84, Mexia, Tex.

CO-OPERATION but no PRORATION
One hundred dollars cash or terms buys undivided non-assessable two hundredth interest in test well on ⅛ perpetual nonrental 320 acre lease, eastern Nebraska, located on core-drilled structure. All money in trust until full amount for turnkey contract to Wilcox sand is on hand. Petroleum Producers, Inc., 800 First National Bank Bldg., Omaha, Neb.

GAS ACREAGE LOUISIANA
43,000 ACRES
I am offering very liberal proposition to any reliable developer who will complete a commercial well in the area. Dale S. Johnson, 10 South LaSalle St., Chicago, Ill.

CAN FINANCE legitimate deals requiring $2,500 or more. Corporations formed any state. Mail sales campaigns, booklets, etc. Coast Service, 314 W. Wilson Bldg., Huntington Park, Calif.

WOULD SELL INTEREST in patent rights. Patent ready for issue by Government. C. C. Stallings, Silverdale, Kans.

FREE SITES

For

REFINERIES AND SUPPLY HOUSES

At MINEOLA TEXAS in center of EAST TEXAS production, best distribution point in territory. Three railways in FOUR directions. Four State and one Federal Highway radiating out of our City in all directions. As pure water as can be found for industrial purposes will be supplied you. Adequate power from Southwestern Gas & Electric Co. to your location. Our citizens and our railroads pledge you their full co-operation.

CHAMBER OF COMMERCE

JOBERT OIL DRILLING COMPANY offers fifty divided assignments interest nonassessable in drilling well on forty acre lease, mile and half from production Kilgore, Texas. Interest money back from first oil runs before company receives a cent. One thousand dollars per. Send money to Citizens Bank or 300 South Saunders St., Tyler, Texas. No stock or units but ownership interest. Total interest in seven-eighths lease one hundred. Jobert Petroleum Company, 300 South Saunders, Tyler, Texas.

BUSINESS OPPORTUNITIES

CURTIS BROKERAGE COMPANY
dealers in
Used Oil Field Equipment
for
Drilling, Production, Gasoline and Pipe Line Departments.
List your surplus with us. And advise us of your needs.
S. O. Curtis, P. O. Box 1214. Seminole, Oklahoma.

MR. WILDCATTER

Do you need money to go to or below contract depth? We may be able to assist you. Write stating the location, depth of well, kind of rig, amount of acreage, when rentals are due, the condition of the hole, contract depth, and all other information possible. Send geological map and report if you have one. P. E. C., P.O. Box 1052, Tulsa, Okla.

NATURAL Gas or petroleum accurately designated from the surface by new geophysical method for expenses and interest in production. Write Oil & Gas Reports, Inc., 428 Union Trust Bldg., Pittsburgh, Pa.

FOR SALE—1/100th over-riding interest in 12,000-bbl. well, Prue survey, Rusk County, $750. Also 1/128th interest in 10,000-bbl. well, Knowles Tract, Kilgore Townsite, $600. Morris Kolber, 1714 Eugene Street, Dallas, Texas.

HAVE MADE LOCATION, Oklahoma City Field, offsetting 41,000 bbl. Wilcox well. Will pay a few investors $10,000 out of first oil for $5,000 cash invested, as well progresses. Write Box 489, Shawnee, Okla.

PATENT ATTORNEYS

REGISTERED PATENT ATTORNEYS
United States and Canada
Before disclosing your invention to anyone, send for blank form.
Evidence of Conception
Bulletin "How to Establish Your Rights" and complete information free.
LANCASTER, ALLWINE & ROMMEL
240 Ouray Bldg., Washington, D. C.

INVENTIONS and patents sold. Outright or royalty. Free examination. Leading firm in country. H. G. Green Co., 180 West Washington St., Chicago, Ill.

PATENTS—Write for our book, "How to Get Your Patent," and evidence of invention. Send model or sketch of invention for our examination and instructions free. Randolph & Co., Dept. 472, Washington, D. C.

FOR SALE

BEST LOCATION OF TWENTY-FIVE ROOM

Hotel in Longview, Texas. Doing unusual business, dining-room serving the best meals, a cash proposition to buyers only. Best reason for selling.

THE DERRICK HOTEL

Longview, Texas.

SERVICE

FORD TRUCKS FOR OIL FIELD USE
New—Used.
BENGSTON MOTOR CO.
Phone 10. McPherson, Kansas.

INCORPORATIONS

CHARTERS — Delaware best, quickest, cheapest, most liberal. Free forms. Colonial Charter Co., Wilmington, Del.

MONEY RAISING

DO YOU NEED MONEY for organizing or financing oil or mining deals? Write 2443 N. W. 12th, Oklahoma City.

FINANCE YOUR OWN project with shares bonded. Quickest, most satisfactory known method of raising capital. Information free. Bankers Interstate Security, Electric Bldg., Denver, Colo.

IF YOU WANT your securities or proposition intelligently submitted to underwriting and security selling houses in New York, write W. W. Hines, Room 803, 150 Broadway, New York City.

CAPITAL: An exp. dependable broker will aid in financing projects of merit. Amster Leonard, East Orange, N. J.

CAPITAL—Call or send facts about high grade oil projects to James E. Miller Co., Room 200 New Brady Hotel, Tulsa, Okla.

CORPORATE ORGANIZING AND FINANCING
BROOKWORTH,
110 East 42nd St., New York.

WE CO-OPERATE in securing capital and guarantee to repurchase your securities. Send facts to the Stow Security System, 2057 Center St., Berkeley, Calif.

ATTORNEY GOING EAST to confer with financial connections would submit meritorious proposition. P.O. Box 273, Fort Worth, Tex.

JOHN MORRIS, 3608 WARREN ST., PHILADELPHIA, PA., invites full facts first letter from capable parties planning negotiation of reasonable capital support for undertakings distinctly of higher order. Use registered mail, safeguard data.

FOR SALE—MAPS

SOUTHEAST NEW MEXICO
M A P S
Send for list.
THE M. H. HUNTER. CO.
Roswell, N. Mex.

OIL DEVELOPMENT maps, any county in Oklahoma, 75 cents each; lease block and detail maps. Write for map list. Lindsay Map Co., Franklin Bldg., Oklahoma City, Okla.

M-A-P-S

We have the only complete line of general area, lease ownership and oil development maps in East Texas.

Prices on Request

ZINGERY OIL MAP CO.
Fair Bldg. Fort Worth, Tex.

KANSAS OIL FIELD MAPS
The Kansas Blue Print Co.
Wichita, Kans.

WANTED

EXPERIENCED OIL MAN. $5,000 investment required. Permanent position for right party. Write Box E-482, The Oil and Gas Journal, Tulsa, Okla.

PARTY OR PARTIES to drill or will sell reasonable 5,000 acres near Gypsy Co. now drilling at Wall, S. Dak. Address H. Reinbold, 2261 Hudson St., Denver, Colo.

WANTED BROKERS: To sell a block of treasury stock, in a holding Corporation. Write for particulars. Charles C. Latham, 5171 LeMay Ave., Detroit, Mich.

SUPPLIES

THE DRILLERS SUPPLY CO.
Oil Well Supplies.
McPherson, Kans.
G. M. Seybold, Manager.

REPAIR

OIL FIELD TRUCKS REPAIRED
SIBERLING TIRES
The Heaston-Carter Motor Service Co. McPherson, Kansas.

Repairs and Parts for International Oil Field Trucks—Prompt Service. Crary Hardware Co., McPherson, Kansas.

CLASSIFIED WANTS

Create and Build Sales

LEASES—PRODUCTION

OIL LEASES AND ROYALTIES
Bought and Sold.
In the Hobbs Pool,
Lea County, N. Mex.
A. L. Gurley, Clovis, N. Mex.
P. O. Box 211 Phone 392

MINERAL DEEDS—LEASES
Mineral deeds under major company leases or accompanied by leases. Stevens-Morton County area, Ness-Trego-Gove area in Kansas and Beaver-Texas Counties, Oklahoma area.
J. W. SAIN
310 Brown Building
Wichita, Kansas.

I AM specializing in Panhandle gas production, leases and royalties; gas is hard to import. Write E. B. Reeves, Alanreed, Gray County, Texas.

WE BUY AND SELL LEASES, ROYALTY, MINERAL DEEDS, and production. Also large and small drilling blocks in the East Texas Oil Fields. Address Bailey & Bailey, P. O. Box 1721, Kilgore, Texas.

HAVE more than 600 acres producing leases on which are 31 producing wells with 17 bbls. production daily for immediate sale. Own part of the acreage in fee. All in Chautauqua County, Kansas. Write Box E-490, The Oil and Gas Journal, Tulsa, Okla.

OIL AND GAS LEASES and royalty for sale near Cumbie and Joiner wells, Van Zandt County; also in other parts of country. J. C. Allen, Grand Saline, Tex.

FREE DRILLING BLOCKS. Hot Spot East Texas; also leases, royalties under development. Ed. Willmann, Blackstone Hotel, Tyler, Texas.

KETTLEMAN HILLS
320 ACRES in the North Dome Area where the Superior's Huffman wells, Petroleum Securities' Felix wells and Associated's Whipley wells are producing the greatest flow of high-gravity oil in California.
STANDARD OIL COMPANY
Owns the land joining this 320 acres on three sides. Each completion of above large wells tends to prove this land.
UNION OIL COMPANY
Purchased a half interest in an oil lease covering 160 acres in this area for which it is reported they are paying eight million dollars or $100,000 per acre—mind you, this is just for an oil lease.
This 320 ACRES is owned outright, it is not leased and we have an outlook of receiving that kind of money for an oil lease plus the money to be received from production by Royalty retained.
I NEED MONEY
Therefore, I will sell a portion of this valuable holding at excursion rates. To the right parties I may sell a half interest. Good stocks and properties will be considered as part payment. A. E. WRIGHT, 406 SUBWAY TERMINAL BLDG., LOS ANGELES, CALIF.

OIL
Harry A. George
Oil Royalties
428 Exchange National Bank Bldg.

Tulsa, Okla.
References furnished on request.

10,000 Acres—Yalobusha County, Miss. 7/8th leases for well. 20 mos. free rentals 25 cents. Fine report. 217 Court Street, Memphis, Tennessee.

WELL LOCATED 6,000 acres northeastern Michigan. Will lease or sell for adequate oil development. Owner, Josviak, 201 North Van Buren, Bay City, Michigan.

BUY NOW: Leases and Royalty in West or East Texas at present low prices will pay buyers larger per cent now than ever before, Anderson, Linz Bldg., Dallas, Tex.

LEA AND ROOSEVELT COUNTIES
New Mexico, 1/64th interest perpetual mineral deeds under Major Oil Co. 160-acre leases. Price $25. Active areas. Roy G. Barton, Avalon Hotel, Clovis, N. M.

LEASES—PRODUCTION

I HAVE A BLOCK of 4,000 acres of patented land leases, all on good structure, geology by A. L. Hawkins, formerly with the Transcontinental Oil Company; want test well. Can furnish casing. T. B. Hendrickson, Roswell Hotel, Roswell, New Mexico.

WANTED FROM OWNERS OR BROKERS
East Texas leases and royalties producing and close in; also let us know your wants if you wish to buy. L. A. (Pat) Casey, Blackstone Hotel, Tyler, Texas.

EAST TEXAS
LEASE AND ROYALTY
I have one-sixteenth royalty under one 40-acre tract and under one 60-acre tract, located in drilling block within one-half mile of well just spudded in. Also have a 100-acre lease connecting two drilling blocks. Both are located in Woods County about 2½ miles east of Mineola. Will sell for less than actual value.
GEORGE H. JONES
Mineola, Texas.

ROYALTIES—PRODUCTION

MID-CONTINENT OIL ROYALTIES
Royalty Sales Company
Suite 523
105 North Clark St.,
Chicago, Ill.

ROYALTIES. Complete, concise information on all producing areas gladly furnished those interested in royalties. Our business is the placing of carefully selected, thoroughly investigated royalties producing excellent income (when stocks and even bonds are failing to do this) before those interested, at bargain prices. James B. McAnally Investment and Speculative Royalties, Hunt Bldg., Tulsa, Okla.

ROYALTY RECORD

Form shows rental record, mortgage record, expenditures, sales record, tax record, well record, monthly production record. All on one sheet; size 8½"x11"; punched to fit standard ring binder. Convenient for desk or brief case. Sheets—$5 per 100; fine leather binder, $5.25; leather tabbed index, $1.20. Order this complete record today. Know what you own and its condition.

E. L. STECK CO.
Austin, Tex.

James B. McAnally

Speculative and Investment
Royalties

Hunt Bldg., Tulsa, Okla.

A real royalty service for dealers. Now specializing in Oklahoma City Pool. Subscribing to all dependable sources of information—with buyers actually on the ground—taking our responsibilities seriously.

TWO TESTS IN PROGRESS in west half of Cleveland County, Arkansas. Perpetual royalties and leases at reasonable prices. Write or wire J. D. Shearer, Stuttgart, Ark.

ROYALTIES on structure, under drilling wells, Stafford, Ellsworth Counties, Kans. Franklin, Gregg, Rusk, Upshur and other East Texas areas. Fast, dependable service for brokers and investors, in United States and Canada. James R. Haynes, Grantville, Kans.

$100 WILL BUY 1/32 landowner's royalty on tract in C. M. (Dad) Joiner's new East Texas development. Excellent opportunity. A. L. Farrel 1, Grand Saline, Tex.

EAST TEXAS ROYALTIES on geology head of production with wildcats drilling close. Sensible prices and individual direct deeds. See maps and geology and pick your own play. Wells drilling make promptness important. R. R. Fisk, 1214-C, Wichita Falls, Tex.

ROYALTIES—PRODUCTION

BEDROCK ROYALTY PRICES ahead of drilling on major company blocks. $6 per square mile. Perpetual deeds and title warranty. Clearly stated and understandable interests. See maps and bulletins. R. R. Fisk, Box 1214-B, Wichita Falls, Texas.

MID-CONTINENT OIL ROYALTIES at reasonable prices and with assurance of safety. Past record "Chicago dealer since 1920" indicates quick return of principal and handsome profit. Write me. J. A. Wolf, 208 South LaSalle St., Chicago, Ill.

EAST TEXAS ROYALTY SYNDICATE

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Bunker C and Diesel Reach New Lows

Continued Keen Competition Makes for Soft Tone in Gasoline on Eastern Market. Cylinder Stocks Are Weak

By A. E. Mockler

New York Bureau, The Oil and Gas Journal, Rooms 1919-21, No. 154 Nassau Street

NEW YORK, June 8.—Bunker "C" and Diesel fuel oil prices reached new all-time lows during the past week, with the posting of a price of 85 cents per barrel for Grade "C" oil and $1.55 per barrel for Diesel oil at principal Atlantic Coast refinery terminals.

The remainder of the market underwent little important modification in the price structure, although continued keen competition made for a soft tone in gasoline and the further reduction in Pennsylvania crude prices tended to dissipate the steadier feeling which had developed in cylinder stocks during recent weeks.

So far as spot markets are concerned, the undertone is still decidedly soft, and it is a buyers' market in most respects. Refiners are watching the export situation closely, and the hope is expressed in some quarters that present low crude levels will permit American refiners to re-enter the export market with prices that will be competitive with those quoted by Russian and Rumanian sellers. Falling-off in export volume during recent months has tended to create a "back pressure" on domestic markets which has been instrumental in further weakening the domestic market position.

Refinery Gasoline

Broadening consumption has come to the aid of the refinery gasoline market in East Coast territory, and, while the market undertone is still far from strong, steadily increasing sales are tending to hold down price cutting to a minimum and the market outlook is slightly more favorable. Posted prices range from 5¾ to 6¾ cents per gallon in tank car lots at refineries.

Stocks of gasoline held by East Coast refineries showed a decline of 147,000 bbls. during the week ended May 30, totaling 8,414,000 bbls. on the later date, and refiners expect to hold down production so that they will be enabled to draw further against storage holdings well into the summer season.

Under current market conditions it is more economical in many instances for refiners to buy distressed gasoline in the open market than it is to produce their own motor fuel. Most of the large companies have written off their gasoline inventories so heavily during the first five months of the year that they are now in a strong position from the competitive standpoint, however, and sellers who attempt to force the situation through price shading will find this time-honored method of marketing more complex than in previous years.

While eastern jobbers are still reluctant to contract ahead, favorable weather since the start of the month has resulted in an exceptionally heavy movement of motor fuel, and distributors have been forced to keep their storage full and replacement stocks "rolling" to insure an adequate supply for their distributive requirements.

Tank Wagon Gasoline

Gallonage has shown material improvement during the week, and the market tone is better. Service stations which previously were posting leading brands at 8 gallons for $1, including the state tax of 2 cents per gallon, are now down to 7 gallons for $1, although second and third-grade gasolines are retailing at 8 gallons for 98 cents and lower.

Interests which were of the belief that the advent of Sinclair's third-grade gasoline into New York would bring in a flood of low-grade motor fuels from outside the State have apparently lost sight of the fact that the state regulations forbid the sale of gasoline lower than U. S. Motor for automotive consumption in New York, and because of this fact low-grade gasoline marketing competition will probably not reach the limits which many have evidently feared.

There have been no general revisions in posted gasoline quotations throughout the territory, but leading marketers are still following the practice of meeting local competition wherever it develops, and as a result the price structure is exceedingly unsettled.

Premium fuels are coming in for a little price shading, but the premium grades have suffered relatively little yet from price competition, save in scattered localities where intensive competition has forced temporary price cuts.

Bunker Oil

Bunker "C" oil reached the lowest point on record during the week, when Standard Oil Co. of New Jersey announced a reduction of 10 cents per barrel to 85 cents per barrel in bulk, f.o.b. refinery terminals, in the New York harbor area, Boston, Baltimore and Norfolk, and 80 cents per barrel at Charleston.

The previous low on bunker oil in this territory was in November, 1914, when the market broke to 89¼ cents per barrel under the influence of heavy shipments of Mexican oil into Atlantic Seaboard territory. The only other periods when bunker oil has broken the dollar mark here was in 1922, when 98½ cent per barrel was posted, and during April of this year when the market was reduced from $1.05 to 95 cents per barrel.

In addition to lowering the posted price at Atlantic Coast ports the New Jersey company also reduced prices 10 cents per barrel at Baton Rouge, Beaumont, New Orleans, Baytown, Texas City, Galveston, Westwego, Harbor Island, Ingleside, Port Aransas and Houston, where the new price is 70 cents per barrel. Other sellers have followed in the declines inaugurated by the New Jersey company.

Bunker oil demand has been running into satisfactory totals in the local market up to a short time ago, when there was a sharp drop in bunkering demand by marine interests. Investigation disclosed the fact that Russian bunker oil was offering at such attractively low prices at certain European ports many lines were bunkering their vessels for the round trip with this cheap Russian oil, with a corresponding decline in their contract withdrawals here.

Diesel Oil

Increasing competition, both abroad and in some domestic markets, has brought about further weakness in the Diesel oil market, and the posted price was reduced as of June 4 to $1.55 per barrel here, a record low price.

The $1.55 quotation now applies at principal Atlantic ports, with the Gulf quotation also off 10 cents per barrel to $1.40 at principal Texas and Louisiana terminal points.

Competition of low-priced Russian Diesel oil in European markets has been instrumental in weakening the Diesel oil market, as has been the case with bunker "C," refiners here explain, and the price cut was made to protect local sellers against this foreign competition, as well as growing competition from distressed oil at the Gulf and in California.

Kerosene

Kerosene was rather inactive in the tank car market and the market was soft. The posted price of 5½ cents per gallon in tank car lots was the exception rather than the rule, and 5¼ cents was the average going price in the few spot sales that were recorded.

Tank wagon movement of kerosene was of limited proportions, posted quotations remaining unaltered throughout the territory. Marketers are looking for an early pick-up in demand, as buying by the summer resort districts get under way.

Lubs

Buyers are still operating hand-to-mouth in the cylinder oil market, the reduction in posted prices for Pennsylvania crude having weakened market sentiment just at a time when buyers were beginning to manifest a little more confidence in the market position.

Price changes in cylinder oils were nominal, with 600 Warren E declining one-half cent to 19 and 20 cents per gallon, and Oil City E showing a corresponding drop at 18 to 18½ cents. Bright stocks were showing a fairly steady tone, and demand showed some improvement.

Industrial demand for lub oils was still rather sluggish, quotations remaining unchanged on both red and pale grades. There has been a little acceleration in the demand for these oils during recent weeks, but buyers are now slackening their operations in an endeavor to hold down stocks as much as possible for the midyear inventory at the close of June.

Gas Oil

The "off season" is definitely here, and moderate trading continues the feature of the gas oil market. Leading sellers are posting 4 cents a gallon for 28 plus recycled oil, and the market appears fairly steady at this level on the limited volume of business now going through.

Although refiners look for a further increase in gas oil gallonage during next fall and winter, due to the steadily growing consumption of this oil in domestic heaters, no efforts will be made to pile up stocks for this demand during the summer. On the contrary, it is expected refiners will endeavor to limit the output of the heavier products as much as possible for the balance of the year.

No early improvement in the gas oil situation is looked for, as evidenced by the fact that furnace oil contracts for the 1931-32 winter season have been made at prices a quarter to a half cent per gallon under the posted prices for the season just ended.

Wax

Buyers were showing further hesitancy in purchasing wax for nearby delivery, the cut in Pennsylvania crude having created a belief that paraffin wax quotations are due for further downward revisions.

There were no changes in spot quotations, but it was evident there were still some weak holdings of wax, and the market was in such position that a firm bid at prices fractionally under quoted levels would probably have secured stocks. As it was, buyers were in most cases unwilling to tender a firm bid, and were marking time pending further developments.

Export Market

Operators were having considerable difficulty in bringing buyers and sellers together in the making of contracts for East Texas oil for later shipment to France. Buyers were demanding contracts specifying a flat price for as long as five years. Sellers, on the other hand, were inclined to contract at a fixed price for not more than one year, the contract to run at posted prices thenceforth. A number of spot cargoes for shipment to England and France have been closed at 57 cents per barrel, f.o.b. ship, Gulf, and additional business has been booked for July-August shipment at the same figure. Spot crude is now available at 55 cents per barrel, f.o.b. ship, Gulf. The oil is guaranteed to be minimum 37 gravity aboard shipment, which is an allowance for a loss of one point in gravity in tank car movement from the well, in most instances.

Business was reported in Venezuelan crude at 57 cents per barrel, and Panuco crude was reported traded for export at 45 cents per barrel.

Reviving interest in the American gasoline market on the part of foreign buyers was seen in the placing of two inquiries in the Gulf market during the week. One inquiry was for a 9,000-ton mixed cargo, 5,000 tons of 64-66 and 2,000 tons each of prime white and water white, the cargo being destined for France, July shipment. Another inquiry in the Gulf market was for a part cargo, 4,000 to 5,000 tons of 64-66, July shipment, to United Kingdom-continent.

A part cargo of 40,000 bbls. of California gas oil or gasoline was booked for shipment to Germany at a price which was not disclosed. The shipment was to be made on a distressed tanker which had been laid up on the Pacific Coast awaiting a European cargo.

Cased gasoline and kerosene have been moving rather sluggishly in the export market, cut-price activities by Russian sellers of cased goods tending to cut substantially into the volume of American sellers in many export markets.

California Oil Receipts

Receipts of California crude and refined petroleum at Atlantic and Gulf Coast ports for the week ended May 30 totaled 142,000 bbls., a daily average of 28,286 bbls., compared with 401,000 bbls., a daily average of 57,286 bbls. for the previous week and a daily average of 46,500 bbls. for the four weeks ended May 30. Details follow:

	Bbls. of 42 gals.
At Atlantic Coast ports—	
Baltimore	25,000
New York	117,000
Total	142,000
Daily average	20,286
At Gulf Coast ports—	
All ports	None
At Atlantic and Gulf Coast ports—	
Total	142,000
Daily average	20,286
Daily average four weeks	46,500

Distribution of total California oil receipts is as follows:

At Atlantic Coast ports—	
Gasoline	142,000

Shipments of California refined products for Atlantic and Gulf Coast ports during the week (with identity of owner of tanker moving the oil where such owner is an oil company) follow:

To New York—97,000 bbls. of gasoline on the Dixie Arrow (Standard Oil Co. of New York), and 80,000 bbls. of gasoline on the Robert E. Hopkins.

To Baltimore—72,000 bbls. of gasoline on the Illinois (The Texas Company), and 78,100 bbls. of gasoline on the Washington.

To Philadelphia—78,000 bbls. of gasoline on the Atlantic Sun (Sun Oil Co.), and 114,400 bbls. of gasoline on the Eastern Sun (Sun Oil Co.).

Imports

Imports of crude and refined petroleum at the principal United States ports for the week ended May 30 totaled 1,728,000 bbls., a daily average of 246,857 bbls., compared with 1,397,000 bbls., a daily average of 199,571 bbls. for the

(Continued on Page 122)

Chicago Market Situation Unsettled

Gasoline and Naphtha Markets Sag. Drop in Fuel and Gas Oil Prices. Fuel Oil Stocks Mounting. Cut Rate Lubricants

By Robert C. Conine

Chicago Bureau, The Oil and Gas Journal, 6 North Michigan Ave.

CHICAGO, June 8.—The principal development which is seen in oil circles as practically certain if the East Texas situation is not remedied promptly will be the refusal of the four major importing companies, Standard Oil Co. of New Jersey, Standard Oil Co. of Indiana, Gulf Oil Corp. and Shell Union Oil Corp., to continue their three months' curb of petroleum imports, started April 1, after the expiration date of June 30.

The certainty that such a move will be made by these four companies is based upon the fact that when the curb was put into effect it was pointed out that these companies were restricting their imports to help stabilize conditions in the industry in the United States. The hope was then expressed that East Texas operators would join in the curtailment movement.

Now that the efforts of these companies in the interests of the industry as a whole have been voided by continued overproduction in Texas (except in such places as Van Field where Pure Oil Co. is providing a good example for the remainder of the State) there seems to be no apparent reason for the major companies to continue to sacrifice the advantages offered by their import facilities. At least, this is the view which holds in the oil circles of this territory.

As one oil man asserts, "petroleum imports have not been the bearish factors in the oil business. Statistics will show that imports in 1930 were half of what they were in 1929, and on April 1, of 1931, the importing companies reduced their imports 23 per cent. The real key to the oil situation is East Texas where the crude oil production exceeds the quantity of material imported before the curb was applied."

Gasoline and Naphtha

The unsettled crude oil situation has caused the gasoline and naphtha markets to sag in the past few days. In the tank car markets we find that at the close of the week some of the major refiners were taking 2⅝ cents a gallon on one car orders. Now that the prices are so low there is practically no concession made for larger orders. The movement is mostly in small spot orders with the ruling prices for U. S. Motor ranging from 2⅝ cents to 3 cents. The 60-62, 400 endpoint material has slipped down from 2⅞ cents to 3 cents, with the new range 2⅝ cents to 3 cents. Antiknock gasoline of 400 endpoint is selling for as much as 3¼ cents. The 64-66, 375 endpoint gasoline ranges from 3¼ cents to 3½ cents. The 64-66, 437 endpoint blended gasoline is selling at 2¼ cents to 2¾ cents. The 68-70, 360 endpoint gasoline is selling at 3½ cents. There is little tank car movement of gasoline in the higher gravities. The extra quality most sought in gasoline now is good antiknock rating.

The sag in naphthas has been sympathetic and the new tank car prices are: For the 437 endpoint material, 2½ cents to 2⅝ cents; for the 450 endpoint naphtha, 2⅛ cents to 2½ cents. Natural gasoline is unchanged at the following prices: Grade A, 72-79.9, 375 endpoint, 2 cents; Grade AA, 80-87.9, 375 endpoint, 1¾ cents; and Grade BB, 84-92, 375 endpoint, 1½ cents.

Service Station Price Cuts

Service station sales show the effects of inclement weather which selects the week-ends for its appearance. It seems that no sooner are plans for bringing down the supply of gasoline in Chicago made for Saturday and Sunday than the skies darken and rain falls.

"Abnormal" Stanolind Blue markets are now posted at 14 points in the territory. These are, with the amount below the regular grade: Chicago, 3 cents; Decatur, 3.5 cents; Davenport, 3.6 cents; Des Moines, 4.6 cents; Sioux City, 4.2 cents; Minneapolis, 3.2 cents; La Crosse, 3.7 cents; Milwaukee, 3.1 cents; Detroit, 4.8 cents; South Bend, 2.4 cents; Springfield, 2.9 cents; St. Louis, 3 cents; St. Joseph, 4.6 cents; and Wichita, 4 cents.

The popularity of the third grade of gasoline is ascribed to the fact that a large portion of the public is interested in small economies in the general business depression. These consumers are expected to resume the use of higher grade motor fuel when times are better.

Kerosene

Kerosene, as might be expected in view of the low level of the gasoline markets, is slow and extremely dull. The price has sagged to 2⅛ cents to 2⅜ cents for the 41-43 water white, and to 2¼ cents to 2½ cents for the 42-44 water white material. The tank wagon price of kerosene in the Chicago district is 9 cents, while the farmer has to pay only 7 or 8 cents for the cut price gasoline. The gasoline, moreover, assures him a cooler motor and eliminates difficult starting.

Lubricating Oils

Lubricating oils are being sold at 10 cents a quart at a large number of cut rate stations. This product apparently has a strong appeal for drygoods department stores. One of the largest department stores in Chicago is selling a "100 per cent Pennsylvania lubricating oil" at less than 10 cents a quart in lots of 5 gallons. This store also is featuring in its window display this week an assortment of petroleum products which includes medicinal oil, insecticide spray, machine oil, automobile polish and greases.

Fuel Oils and Furnace Oils

The past week witnessed a drop in the fuel and gas oil prices quoted by major refiners. These markets are given as follows: 18-22 fuel oil, per barrel, 25 cents to 30 cents, for low cold test, and 15 cents to 20 cents for high cold test material; 22-26 fuel oil per barrel, 30 cents to 35 cents; 28-30 fuel oil, per barrel, 50 cents to 55 cents for the zero material, and 40 cents to 45 cents for the regular; 32-36 industrial gas oil, seven-eighths cent to 1⅛ cents; 32-36 zero gas oil, 1¼ cents to 1½ cents; 38-40 straw distillate, 1¼ cents to 1½ cents.

Increasing stocks of fuel oils are looked upon by many of the marketers as one of the most serious problems confronting their branch of the industry. Aside from the fact that huge quantities of fuel oil are being sold at prices which net less than 10 cents a barrel at the refinery, thus creating havoc with the price structure, there is the consideration that the fuel oil which is literally flooding the country in the wake of increased gasoline consumption must occupy space in tank cars, pipe lines, or storage tanks. The industrial demand, because of depressed business conditions, is probably about half of what it should be, and it is not likely that cracking to produce gasoline will draw very heavily on the supply of fuel oil while cheap gasoline is pouring from scores of topping plants operating on practically free crude oil. Just why buyers should continue to pay the prices which have been in effect on fuel oils when this commodity promises to become a serious clog is difficult to see. The 10-cent per barrel fuel is not restricted to one section of Texas, nor to Texas operators alone. Refiners located much nearer to Chicago offer the same prices.

Fuel Oil Stocks Mounting

One student of the fuel and gas oil markets says this: "Any oil marketer or refiner who can remember conditions existing eight or nine years ago, will understand what is meant by the statement that fuel oil can clog up the marketing and refining businesses. Most of the smaller refiners need what they can get out of the fuel oil to make their profit. The larger refiners have facilities for making desirable products from the fuel oil if that market is unfavorable. In view of these facts it seems apparent that the smaller operator will suffer most severely. Yet while the major companies are cutting down their crude oil runs to the stills as much as 50 per cent, the smaller refiners in flush areas are not only running their plants at capacity but are adding to that capacity, and a surprising number of new skimming plants are under construction or in the early stages of stock selling."

This is not an isolated view and it is interesting to note that a number of refiners have withdrawn from several of the fuel oil and gas oil markets expressing the preference of storing their products rather than selling at the present low prices. If fuel oil and gas oil stocks continue to mount the policy of storing the fuels in preference to selling will appear of dubious value. In fact, tank wagon prices on furnace oils which were recently announced by a major refiner for the season of September, 1931, to May, 1932, would indicate that little if any improvement is looked for in these markets.

Viscosity and B.t.u. Versus Gravity

While the specific gravity of a fuel or furnace oil is necessary information in arriving at the heating value of the oil per gallon, gravity should not, it is increasingly being urged by refiners and marketers, be used to designate different grades. What is much more important to the buyer of these oils is the viscosity and the heat content per gallon. The viscosity is important from a mechanical standpoint and controls in the handling of the fuel, while the heat value, or B.t.u., is what the purchaser actually buys and is the important consideration from the standpoint of economy.

Most of the major interests base their prices and gradings on characteristics other than gravity. However, in the case of a number of marketers it is necessary to speak in terms of gravity, as was instanced just recently when one sales manager had to seek out the refinery technologist to learn what the buyer was seeking. Below are given the six grades and their characteristics with an approximation of the gravity designation:

Specifications

No. 1 (38-40 gravity), flashpoint 110°-165° F.; No. 2 (32-36 gravity), flashpoint 125°-190° F.; No. 3 (28-30 gravity) flashpoint 150°-200° F, viscosity: Saybolt universal at 100° F., 55 seconds; No. 4 (24-26 gravity), flashpoint 150° F., viscosity: Saybolt universal at 100° F., 125 seconds; No. 5 (18-22 gravity), flashpoint 150° F., viscosity: Saybolt Furol at 122° F., 100 seconds; No. 6 (14-18 gravity), flashpoint 150° F., viscosity: Saybolt Furol at 122° F., 300 seconds.

Eliminates Two Grades

The place of two of these grades in the markets has been questioned by a prominent liquid fuel technologist before the American Oil Burner Association. These are grades Nos. 3 and 5. The No. 1 grade, this authority believes, will eliminate itself eventually due to the increasing demand for cracking. In his address before the association he declared that the burner salesmen were damaging their own business by insisting that their burners can operate on one grade of oil only.

CHAIRMAN WILBUR SAYS SITUATION UP TO TEXAS

WASHINGTON, D. C., June 8.—"In spite of the great efforts of the oil industry and the recommendations of the Oil States Advisory Committee there is continuing demoralization in the Mid-Continent area due to the rapid and heedless exploitation of the East Texas Field. Not only has this brought an abnormally low price but it is resulting in the usual wastes that come with overproduction."

This is asserted in a statement given out by Ray Lyman Wilbur as chairman of the Federal Conservation Board.

"The importing oil companies," he continues, "have gone beyond their individual programs in the reduction of oil imports into this country from foreign fields.

"There has also been a considerable degree of mastery of the proration problem in all of the large producing states except Texas. There the attempt of the Railroad Commission to bring the new Texas field into the state program seems to be unsuccessful. There has been some discussion of the necessity for new legislation to meet the serious problem involved. I understand the governor of Texas, who is fully familiar with the situation, and desirous of doing everything possible, is being urged to call a special session of the legislature.

"From a distance it would seem that there is no relief in sight for the oil industry in the Mid-Continent region until this new field in East Texas is brought under the normal proration programs now existing in the other fields of the country."

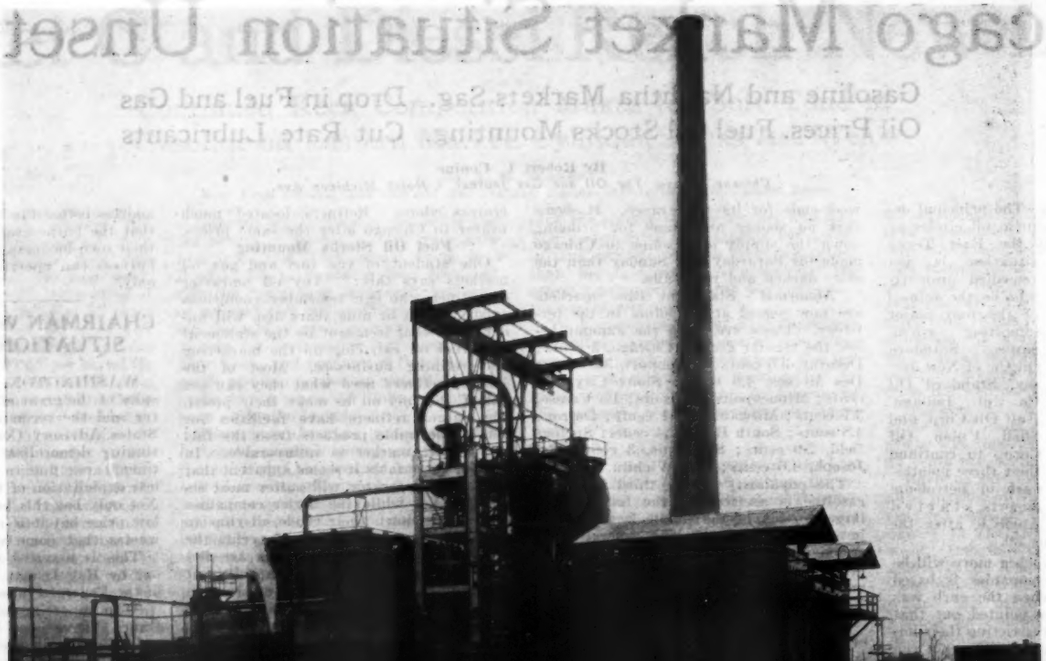
GERMAN OIL OUTLOOK BETTER SAYS KESSLER

NEW YORK, June 8.—Royal Dutch-Shell is acquiring an interest in potential petroleum producing properties in Germany, and will actively participate in exploitation work in that country, said J. B. Aug. Kessler, joint managing director of the Royal Dutch Petroleum Co., speaking at the recent launching at Bremen of Anglo-Saxon Petroleum Co.'s new 11,500-ton motor tanker, "Goldshell."

German subsoil, he said, has been proved to contain more natural crude oil than had hitherto been expected, and, while he warned against overoptimism regarding petroleum possibilities in that country, declared that his company would do its share in strengthening the German economic structure by aiding in the development of an important oil industry in German territory.

OIL AND PETROLEUM YEAR BOOK

The "Oil and Petroleum Year Book" for 1931 by Walter E. Skinner, just issued, is the twenty-second annual issue. Covering 450 pages it contains particulars of 620 English and foreign companies—producers, refiners, dealers, carriers—pipe and steamship—and oil finance companies, including the principal American and foreign companies. Lists are given of officials and 2,250 directors, 325 secretaries and 185 consulting engineers, managers and agents. Copies can be obtained from Walter E. Skinner, 15, Dowgate Hill, Cannon Street, London, E.C. 4, price 8s. 6d. net post free.



Rerun Distillation Units

One of three similar Foster Wheeler rerun units is here shown. The equipment will process 4,000 barrels per day of pressure distillate. The products continuously recovered to specifications include: gasoline, naphtha and gas oil bottoms.

A low operating temperature is an essential feature of the installation.

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FOSTER WHEELER

Brief Items for Petroleum Refiners

German Companies Contract to Build Plant at Misberg

NEW YORK, June 8.—Preussag and Elverath, leading petroleum companies operating in Germany, have contracted with an American company for the construction of a refinery with initial throughput capacity of approximately 1,500 bbls. daily, with provision for later increases in productive capacity to 4,500 or 6,000 bbls. per day.

The new refinery will be located near Misberg, and will be equipped with Dubbs cracking units, although the contract stipulates that machinery and materials, as far as possible, be of German manufacture. The terms of the contract call for completion within 10 months, with the entire plant, with a guaranteed throughput, to be in operation within 40 days after the 10 months' period.

Selection of equipment came as a result of numerous tests one of which was the shipment of 650 tons of German crude to the United States for experimental purposes. Experimental runs were also made at Langbrugge, near Ghent in Flanders.

According to the Petroleum Times of London, a question which required careful consideration in connection with the new German refinery was whether the principal product should be benzine or lub oil. For the marketing of a substantial production of lub oil, the two companies interested would be forced to organize an extensive sales department, which would encounter stiff opposition from established brands in Germany. Both companies, however, have adequate motor fuel outlets, and because of this it has been decided that the principal product of the new plant will be benzine.

The Elverath crude is described as of a heavy type, yielding but 7 to 8 per cent benzine on distillation, while the Preussag oil, a lighter product, yields approximately 20 per cent of benzine on distillation. The two crudes, however, can be cracked at the same temperature, so that after topping they can be mixed to form a satisfactory cracking stock. Through the use of cracking, a recovery of 55 per cent benzine is looked for.

Another factor influencing the companies in their decision to specialize in the output of motor fuel is the fact that deep drilling in the Hanover fields has brought to light a new producing zone yielding lighter crude oil than that formerly obtained from the older and shallower German producing areas. Elverath now has production of approximately 10,000 tons of crude per month, while the Preussag company has monthly production of approximately 3,000 tons of crude.

CHAIN STORE TAX

CHICAGO, June 8.—Conflicting reports on the application of the new chain store tax law in Indiana to filling stations has caused the more important marketers to consider the cost to them should the courts find the law does apply. The Standard Oil Co. of Indiana, the largest marketer in the State, has estimated the total cost annually at $31,804 on its 1,272 stations which the company says represents only fifteen-one-hundredths of 1 per cent per share of stock outstanding.

F. T. CUTHBERT RETIRES

Frederick T. Cuthbert, who has been connected with the Solar Refining Co. for many years, has retired as president. His successor has not been announced. J. R. Cuthbert is vice president and general manager of the company.

RUMANIAN MARKETING SITUATION IMPROVING

NEW YORK, June 6.—Sir Henri Deterding, managing director of the Royal Dutch-Shell combine, was successful in his recent visit to Rumania in reviving the cartel of Rumanian refiners, according to the "Deutsche Bergwerks Zeitung." The cartel, taking in the principal Rumanian petroleum companies, was dissolved last year, and through the instrumentality of Sir Henri's intervention, a new cartel has been arranged, the report states.

As a result of the revival of the cartel, refined products prices have already advanced in Rumanian markets, and further increases are looked for. Revival of the Rumanian cartel is of direct interest to American refiners, as the breakdown in Rumanian gasoline prices, following the dissolution of the combine last year, started Rumanian gasoline prices on a decline which carried the market to record low levels and diverted to Rumanian sellers considerable foreign gasoline, kerosene and other business normally placed at the United States Gulf or in California. With some semblance of stability restored to the Rumanian situation through the revamping of the combine, less drastic price competition may be looked for from that quarter, although the Rumanian industry has given concrete evidence of its determination to continue a world factor in the gasoline market through approval of the new Rumanian national gasoline pipe line, which will transport motor fuel from inland refinery points to tidewater at Constanza.

START SUITS AGAINST CALIFORNIA MARKETERS

LOS ANGELES, Calif., June 6.—Twenty-eight marketing companies have failed to pay their first quarter gasoline tax to the State of California and the attorney general expects to take such legal action as permitted in order to collect it. The total amount involved is $1,375,075, and one company owes $202,490, which emphasizes the importance of the question. California instituted a method in April whereby the taxes are paid weekly and tax collections are backed with a bond from each company. For this reason the attorney general expects to speedily settle the suits he proposes to start.

GLOBE MAY BUILD NEW REFINERY IN KANSAS

Interests affiliated with the Globe Oil & Refining Co., which operates two refineries in Oklahoma and one in Illinois, are considering plans to build a large skimming plant in Kansas. I. A. O'Shaughnessy, president of the Globe companies, is the principal owner of the Lario Oil & Gas Co., which has large holdings in the McPherson Pool in Kansas. The potential production of completed wells is estimated at 25,000 bbls. daily.

If officials decide to build the plant, it probably will be located at McPherson, the county seat of McPherson County, or some other nearby city. The plans under consideration call for a plant with a skimming capacity of 10,000 bbls. daily. It has not been decided whether the plant will be operated under the name of the Globe or Lario companies. The Globe refineries are located at Blackwell and Cushing, Okla., and Lemont, Ill.

MAKING TEST RUNS AT APACHE COMPANY PLANT

The Apache Refining Co. is now making test runs at its new skimming plant located near Dumas, in Moore County of the Texas Panhandle. The plant which consists of a pipe still and tower will have a rated capacity of 5,000 bbls. daily. For the immediate future it is not expected that the runs will exceed 3,000 bbls. daily.

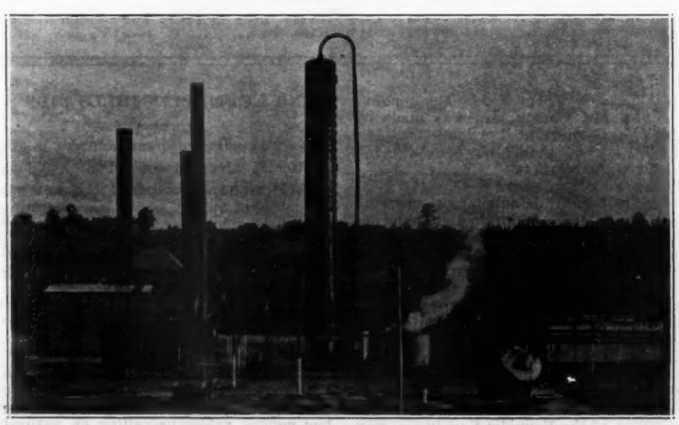
The plant is located 4½ miles south of the Sunray Pool, in Moore County, and oil will be secured from that area for plant operation. The plant is connected to the pool by a pipe line of the Moore County gathering system which is owned by the Sunray Oil Co. The latter company owns most of the production in the Sunray Pool. Approximately 90,000 bbls. of crude oil are now in storage at the refinery.

The Apache company is owned by California capital. Sales of the company's products will be handled by the Sunray company which has its general offices in the Philcade Building, Tulsa.

DIES FROM BURNS

E. O. James, 33, a fireman for the Tonkawa Petroleum Co. refinery at Pyote, Tex., was fatally burned Sunday when a still exploded. Mr. James died in a Pecos hospital.

FIRST REFINERY IN EAST TEXAS



Henderson, Tex., refinery of the East Texas Refining Co. This 6,000-bbl. plant which has been in operation for three months was the first to be built as a result of the new East Texas development.

WESTERN COMPANY WILL CONTINUE RECEIVERSHIP

LOS ANGELES, Calif., June 6.—The Western Oil & Refining Co., which recently was placed in the hands of a receiver will continue to operate its properties and expects in the near future to increase crude oil runs to stills at its refinery at Wilmington, Calif.

Several bids have been received for the company's properties, and, headed by Richard Florian, president, reorganization plans have been discussed. According to a report made to Judge Paul J. McCormick, of the United States District Court, by Robert C. Gillis, receiver, there would be a substantial sacrifice if the properties were sold at this time.

The receiver's report shows that the $7,784,035 assets listed on the company's books when the receiver was appointed in April have shrunk to $2,854,582. This shrinkage of approximately $5,000,000 is largely due to depreciation in inventories. Total liabilities of the company are set at $1,666,624, making the net value of the company assets at $1,185,949. The immediate cause of the receivership was the inability of the company to meet cash or bond requirements for obtaining a license to do business under the new gasoline tax law, the amount of the gas tax claimed by the State as due at that time being $320,780.

The receiver said that negotiations are now under way to increase the crude runs to stills at the refinery from 5,000 to 10,000 bbls. daily.

CONSIDER GERMAN MONOPOLY

NEW YORK, June 8.—Creation of an oil monopoly in Germany for alleviating the financial difficulties of the Reich is receiving serious consideration, according to a copyrighted cable from Berlin to the Herald Tribune today. A special committee of the Peoples party representing the interests of German industrialists recently worked out a program with this purpose along the line of the match monopoly operated in Germany by Ivar Kreuger, the "match king."

The Peoples party advocates a scheme of mixed monopoly with American and British Dutch oil companies participating, the plan involving the advance to Germany of 1,000,000,000 marks as a loan on the basis of several years proceeds from oil sales. The annual profits to the German government from the monopoly is estimated at 350,000,000 marks. It is questionable, however, if foreign oil companies would be willing to finance the creation of such a monopoly in view of present conditions in the oil industry.

START SMALL PLANT

A refinery with a capacity of 300 bbls. per day, which is owned and operated by M. D. Carson, has been completed at Brady, Tex., and is expected to begin operation this week. The plant will manufacture gasoline, fuel oil and tractor fuel from crude oil shipped from Brown County. This plant is located near the railroad tracks within four blocks of the business district.

SMALL SKIMMING PLANT

DENVER, Colo., June 6.—Gray Coggin and associates are assembling material for their skimming plant on the Grayburg Oil Co.'s lease 23 miles east of Artesia, N. M., and expect to have the plant in operation by June 15. It will have a capacity of 120 bbls. a day and will be operated under the name of the Desert Refining Co.

Manufacture of Natural Gasoline

Discuss Trends Natural Gasoline Plant Operation

The adoption of two stripper stills, operating in series and a reabsorber, operating at a relatively high pressure was presented as a modern trend in gasoline plant operations in the Mid-Continent by E. A. Wooden of the Sinclair Oil & Gas Co. during a discussion of operating problems before the natural gasoline association's annual meeting in Tulsa. In briefly outlining other tendencies, Mr. Wooden said:

"In passing, a brief mention should be made of the boiler plant. There is a marked tendency to adopt modern power plant practices to obtain an economical steam balance. By using higher pressures, superheaters, and bleeder type turbines for driving generators, sufficient power for plant operation may be produced as a by-product, and having extraction steam for preheating and reheating absorption oil, also not have an excess of dry exhaust steam for stripping purposes. Draft gauges, steam meters, centrifugal boiler feed water pumps, and deareating feed water heaters are coming into general use in the larger plants.

"The use of two stripping stills operating in series and reabsorber operating at relative high pressures, is being recommended as being more economical than the usual absorption plant installation. The lighter fractions which are removed from the primary still operating at 75 to 100 pounds pressure, are reabsorbed at a slightly lower pressure and the stripped gas is passed into the residue system. A very small quantity of oil is used in the reabsorber and the saturation is much higher than normal. The secondary still is operated at low pressures and practically all vapors are condensed.

"The economies claimed for this hookup are: The elimination of the recompressor, or low pressure reabsorber which requires a large oil circulation, a 50 per cent saving of steam which reduces the cost of the boiler plant, the lightening of the stabilizer load which saves steam, and the return of vapors to the residue system.

"In order to keep absorption oil at a low molecular weight it is necessary to prevent emulsions and remove heavy materials carried into the oil by the gas. Equipment is being offered for continuously redistilling a portion of the lean oil stream. Where this expense is not justified it is advantageous to filter a portion of the lean oil so as to remove gums, tars, b.s. and water.

"Where it is necessary to build a large gas lift plant, a high pressure absorption plant can be installed at a small cost as compared with the low pressure plant, and it is also more efficient.

"High pressure gas, if not wasted, is an economical and satisfactory source of power for driving steam turbines. In order to avoid corrosion difficulties the gas should be heated so as to keep the exhaust temperature above the dewpoint.

"Perhaps the greatest contributing factor for the economical operation of the modern gasoline plant is the refinement of the instruments and automatic controls of temperature, pressure and rates of flow. The human element is being more and more removed as automatic controls are perfected."

APPOINTED RECEIVER

Joseph K. Carson, Jr., of Portland, Ore., was named receiver for the Forrest E. Gilmore Co. with operating headquarters in Tulsa. The Gilmore company operates a number of natural gasoline plants in the Mid-Continent Field. The appointment of Mr. Carson, Jr., was made by the federal court at Portland, Ore., on application of the Bank of California National Association.

The complaint charged that the company has been in default for four months and has failed to maintain the payments to the sinking fund. It was also claimed that the company had failed to keep properties insured to 90 per cent of the full insurance value. According to Chester A. Shappard, president of the company's board of directors receivership action was taken with the consent of the directors. The low prices prevailing for natural gasoline over the past several months was held responsible for the receivership.

Early in March, J. H. Brooks, vice president of the Republic Supply Co. was appointed receiver for the Oklahoma company. Acting for the receiver, C. J. Smith has been managing the properties.

PRODUCTION CONTINUED TO SHOW STEADY DECREASE DURING APRIL

With a total of 160,600,000 gallons for the month, natural gasoline production in April continued to show a decline. The average of 5,350,000 gallons daily for the month compares with an average of 5,480,000 gallons in March of this year and 6,200,000 gallons in April of last year. Natural gasoline production has shown a consistent reduction for several months and it is believed that this trend will continue through the summer months.

The reduction in production during April was general. In the Appalachian area where a number of small plants have been shut down due to the low prices prevailing the production dropped from 8,400,000 gallons in March to 6,800,000 gallons in April. The arrival of warmer weather with greater evaporation losses is also a factor in this decline. In the middle western states the production dropped from 1,000,000 gallons in March to 800,000 gallons in April.

Although the Oklahoma City Pool had an increase in April, the rest of the fields in Oklahoma showed a decline and there was a reduction for the entire State when compared with March. Outside of Oklahoma City, several plants have been shut down in recent months.

In Texas all of the listed fields showed a decline in April. The average daily production for the month was 1,240,000 gallons, which compares with 1,271,000 gallons in March. The Texas Panhandle, which is now the largest producing area in the Mid-Continent, dropped from 18,400,000 gallons in March to 17,500,000 gallons in April.

In Louisiana, the natural gasoline production declined slightly in April with practically no change in Kansas and Arkansas. The Rocky Mountin production increased from 5,300,000 gallons in March to 5,500,000 gallons in April.

The Kettleman Hills area in California increased slightly in April but plants in other parts of the State considered as a unit declined so that the total production dropped from 61,800,000 gallons in March to 58,700,000 gallons in April. The production of the Long Beach area dropped from 13,400,000 gallons in March to 11,800,000 gallons in April. The Santa Fe Springs production in April was 400,000 gallons less than in March.

Compared to a year ago April production was 850,000 gallons daily or 15 per cent less. Oklahoma has had the greatest decline for the year, its production having dropped from 53,800,000 gallons in April, 1930, to 41,600,000 gallons in April of this year. The following table is based on Bureau of Mines report.

PRODUCTION STOCKS AND CONSUMPTION OF NATURAL GASOLINE FOR APRIL

	Natural gasoline						Blended motor fuel, April, 1931		
	Production				Stocks end of month				
	Apr., 1931	Mar., 1931	Apr., 1930	Jan.-Apr., 1931	Apr., 1931	Mar., 1931	Natural gasoline used	Naphtha or other oils used	Stocks end of month
Appalachian	6,800	8,400	8,100	31,700	5,574	5,608	74	91	212
Ill., Ky., etc.	800	1,000	1,100	3,900	543	565	....	....	....
Oklahoma	41,600	43,700	53,800	167,300	15,505	12,399	110	117	101
Oklahoma City	4,600	4,400	2,900	15,800	3,607	2,742	....	....	....
Osage County	5,600	5,900	6,800	24,300	3,524	2,300	4	5	7
Seminole, etc.	16,600	17,400	25,100	65,600	3,899	2,981	14	12	13
Rest of State	14,800	16,000	19,000	61,600	4,475	4,376	92	100	81
Kansas	2,800	2,900	3,000	11,000	2,477	2,336	5	1	6
Texas	37,200	39,400	40,200	154,100	11,473	10,876	135	222	55
Panhandle	17,500	18,400	20,600	73,100	5,731	4,696	46	45	27
North Texas	3,400	3,600	3,600	14,400	1,402	1,225	10	8	3
West Central	11,100	11,500	12,400	45,100	3,290	3,296	74	165	21
Rest of State	5,200	5,900	3,600	21,500	1,000	1,659	5	4	4
Louisiana	4,700	4,900	6,000	19,100	1,159	1,016	30	18	9
Arkansas	2,500	2,600	2,700	10,100	254	243	208	174	15
Rocky Mountain	5,500	5,300	4,500	21,300	1,016	992	....	....	....
California	58,700	61,800	66,600	238,500	4,253	3,080	....	....	....
Huntington Beach	1,900	2,000	2,700	7,600	....	....	....	....	....
Kettleman Hills	14,800	14,600	12,600	57,500	....	....	....	....	....
Long Beach	11,800	13,400	14,300	51,200	....	....	....	....	....
Santa Fe Springs	10,800	11,200	16,600	44,000	....	....	....	....	....
Ventura Avenue	4,800	5,100	4,600	19,100	....	....	....	....	....
Rest of State	14,600	15,500	15,800	59,100	....	....	....	....	....
Total	160,600	170,000	186,000	657,000	42,254	37,115	562	623	398
Daily average	5,350	5,480	6,200	5,480	....	....	19	21	13
Total (thousands of barrels)	3,824	4,048	4,428	15,643	1,006	884	13	15	9
Daily average	127	131	148	130	....	....	....	....	....

NO KETTLEMAN HILLS BIDS

Natural gasoline manufacturers in the California area did not submit a bid on the Government's share of the wet gas produced in the North Dome of Kettleman Hills, reflecting the adverse market conditions. The call of bids was issued April 23 and the original time limit was set for June 1.

CLOSE ARTESIA PLANT

ROSWELL, N. Mex., June 8.—The Phillips Petroleum Co. has shut down its Artesia, N. Mex., plant because of the low market prices prevailing on natural gasoline. The plant was built in 1926. No plans have been formulated for resuming operations.

PRECAUTIONS TO TAKE IN OPERATING BOILERS

"The Booster"*

The boiler, more or less relegated to the backyard, is so located to provide a maximum of safety. To insure this most desirable feature in addition to minimizing repair costs and shutdown time it must be carefully and intelligently handled.

The following questions, each requiring an affirmative answer to show proper conditions, are given to point out a few important essentials in boiler operation.

When Being Fired

Has gauge been drained to check the water level before lighting fire?

Has trycock been opened to expel air until steam comes?

Do you stand to one side of the opening when lighting pilot light?

Do you stand to one side of the opening when lighting burner?

Have you checked all valves to see that they are in proper position before firing?

Is the valve on the steam gauge open?

Has the stack damper been opened before lighting pilot?

Do you tighten up the manhole plate bolts when the boiler has come up to a small pressure?

Do you take at least 10 hours or as much more time as is possible to bring the boiler up to line pressure?

Do you pull the safety valve before the boiler reaches line pressure?

Do you cut in a boiler being placed on the line when the boiler pressure is several pounds less than the line pressure?

Do you open the main header valve slowly?

Is your quick opening blowoff valve closer to the boiler than the other valve?

Do you open your quick-opening blowoff valve first and close it last?

Do you blow down your boiler at least once a tour?

Do you blow down your water column at least once a tour?

Do you turn your face away for safety when wiping off a gauge glass on a boiler under pressure?

When Shut Down

After cutting fires, do you wait until brickwork has cooled somewhat before shutting main steam header?

Do you close damper and all other air openings at the time the fires are turned out?

Where there is no damper, do you open the smoke box door when the fires are turned out?

Do you disconnect gas lines to the burners and pilot from the main gas header when the boiler is shut down?

*Published by the Standard Gasoline Co.

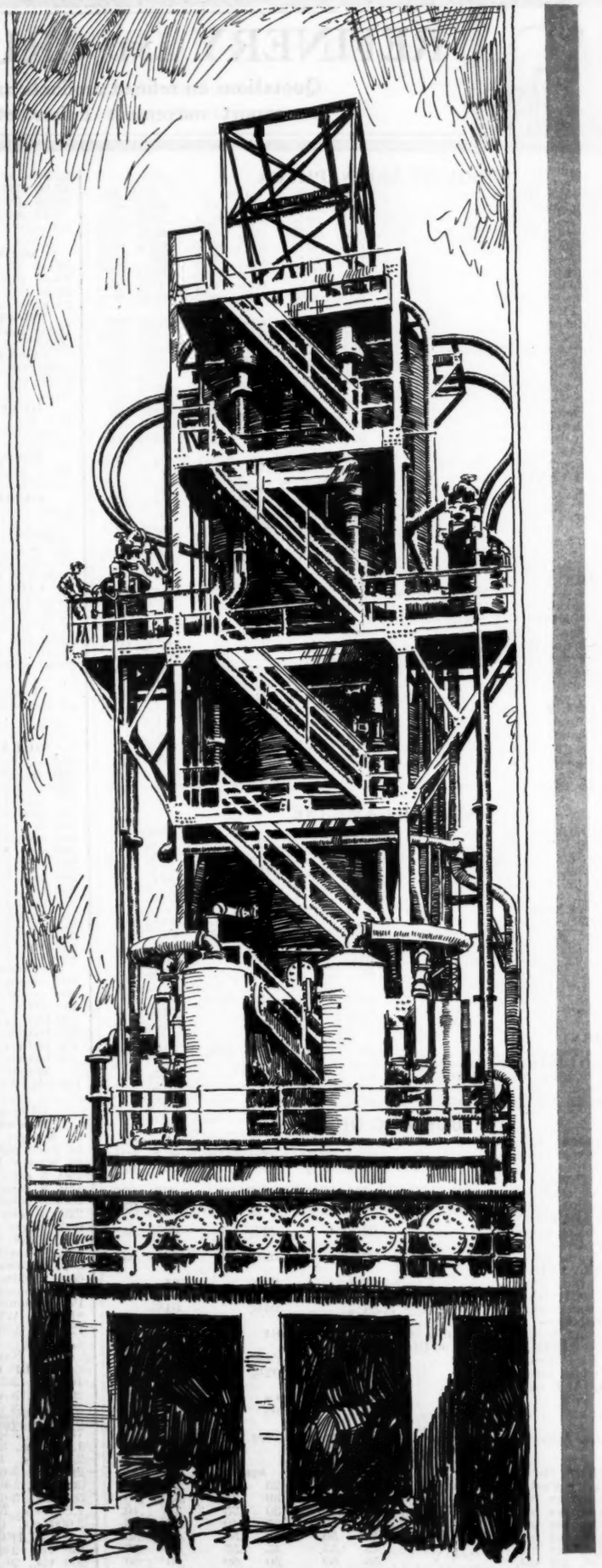
EAST TEXAS PRORATION MAY HASTEN BUILDING

Should a plan of prorating the East Texas Field be found effective and the gas pressure be conserved it is likely that natural gasoline plants will be built there. Under the present disorganized methods of development the small amount of gas present is wasted to the air and the life of the field is undoubtedly being shortened as a result.

Natural gasoline manufacturers have made surveys of the area and have tentative plans for building plants and it is possible that actual building will start should it become evident that a plan of conservation will be followed.

The gas shows approximately 1 gallon recovery per 1,000 feet. This is not high enough to permit a large investment, particularly considering the low market prices at present, but will support several scattered plants in the field.

THIS 21-foot Kellogg vacuum bubble tower at the Ponca City refinery of the Continental Oil Company is running 4500 bbls. daily of topped Mid-Continent crude. From this charge, the unit produces a wax distillate, and an overhead cylinder stock having a viscosity of 150 seconds Saybolt Universal at 210° F. The wax distillate is being pressed, and the cylinder stock finished in the regular refinery equipment.



The M. W.
KELLOGG CO.
225 Broadway, New York

LOS ANGELES, 1031 SO. BROADWAY
TULSA, PHILTOWER BUILDING

REFINERY AND CRUDE PRICES

Quotations on refined products are for interstate or export movement unless otherwise noted.

GASOLINE AND NAPHTHA

	June 9		June 2		May 26	
OKLAHOMA (Group 3)—						
50-52 450 endpoint	.02⅝	.02⅞	.02¾	.03	.02⅞	.03
56-58 450 endpoint	.02¼	.02½	.02½	.02¾	.02⅝	.02¾
58-60 437 endpoint (U. S. Motor)	.02⅜	.02¾	.02⅝	.03	.02¾	.03¼
60-62 437 endpoint	.02½	.02¾	.02¾	.03⅛	.02⅞	.03¼
60-62 400 endpoint	.02⅝	.03	.02¾	.03¼	.03	.03½
64-66 375 endpoint	.03	.03¼	.03¼	.03½	.03¼	.03¾
68-70 360 endpoint	.03¼	.03¼	.03⅜	.03¾	.03½	.03¾
64-66 437 endpoint (blend)	.02¼	.02½	.02½	.02¾	.02⅝	.02¾
NORTH TEXAS—						
50-52 450 endpoint	.02½	.02¾	.02¾	.03	.02¾	.03
58-60 450 endpoint	.02¼	.02⅝	.02½		.02½	.02¾
58-60 437 endpoint (U. S. Motor)	.02⅝	.02⅝	.02½	.02¾	.02⅝	.03
60-62 400 endpoint	.02⅝	.02¾	.02⅝	.03¼	.02⅞	.03¼
64-66 390 endpoint	.02¾	.03	.03	.03¼	.03⅛	.03¼
64-66 375 endpoint	.02⅞	.03¼	.03¼	.03½	.03¼	.03½
68-70 360 endpoint	.03⅛	.03¼	.03⅜	.04	.03⅜	.04
64-66 437 endpoint (blend)	.02¼	.02½	.02½	.02¾	.02⅝	.03
***NORTH LOUISIANA—**						
58-60 437 endpoint (U. S. Motor)	.02¾	.03	.03	.03¼	.03¼	.03¾
***ARKANSAS—**						
58-60 437 endpoint (U. S. Motor)	.02¾	.03	.03	.03¼	.03¼	.03¾
PENNSYLVANIA—						
52-54 Naphtha	.04⅜		.04¾	.05	.04¾	.05
54-56 Naphtha	.04⅜		.04¾	.05	.04¾	.05
58-60 Gasoline	.04⅞	.05	.04⅞	.05	.05	
60 Gasoline	.05⅛	.05¼	.05⅛	.05¼	.05⅛	.05¼
62 Gasoline	.05	.05¼	.05¼		.05¼	
64 Gasoline	.05¼	.05¾	.05½	.05¾	.05½	.05¾
68-70 350 endpoint gasoline	.06		.06¼		.06¼	
CALIFORNIA—						
†54-58 437 endpoint (U. S. Motor) domestic	.03	.03½	.03	.03½	.03	.03½
†58-60 400 endpoint domestic gasoline	.03¼	.04	.03¼	.04	.03¼	.04
CHICAGO DISTRICT (Based on Group 3)—						
50-52 450 endpoint (Naphtha)	.02½		.02⅞	.03	.03	
58-60 437 endpoint (U. S. Motor)	.02⅝	.03	.02½	.03	.02¾	.03⅛
60-62 400 endpoint	.02⅝	.03⅛	.02⅞	.03	.03⅛	.03¼
64-66 375 endpoint	.03¼	.03½	.03¼	.03½	.03½	.03⅝
64-66 437 endpoint (blend)	.02¼	.02⅝	.02½	.02¾	.02⅝	.02⅞
68-70 360 endpoint	.03½		.03½		.03⅜	.04⅛
GULF COAST (Export)—						
58-60 U. S. Motor	.04		.04¼		.04¼	
60-62 400 endpoint	.04½		.04½		.04½	
61-63 390 endpoint	.04½		.04¾		.04¾	
64-66 375 endpoint	.04¾		.05		.05	

*Louisiana, Arkansas, Mississippi and East Texas delivery. †For local consumption.

NATURAL GASOLINE

	June 9		June 2		May 26	
OKLAHOMA (Group 3)—						
Grade A, 72-79.9, 375 e.p., rec. 90%	.02		.02		.01⅞	.02
Grade AA, 80-87.9, 375 e.p., rec. 90%	.01⅝	.01¾	.01⅝	.01¾	.01⅝	.01¾
Grade B, 76-83.9, 375 e.p., rec. 85%	.01½		.01½		.01½	
Grade BB, 84-92, 375 e.p., rec. 85%	.01½		.01½		.01½	
Grade C, 80-92, 375 e.p., rec. 78%	.01½		.01½		.01½	
NORTH TEXAS—						
Grade A, 72-79.9, 375 e.p., rec. 90%	.02		.02		.01⅞	.02
Grade AA, 80-87.9, 375 e.p., rec. 90%	.01⅝	.01¾	.01⅝	.01¾	.01⅝	
Grade B, 76-83.9, 375 e.p., rec. 85%	.01½		.01½		.01½	
Grade BB, 84-92, 375 e.p., rec. 85%	.01½		.01½		.01½	
Grade C, 80-92, 375 e.p., rec. 78%	.01½		.01½		.01½	
NORTH LOUISIANA—						
Grade AA, 80-87, 375 e.p., rec. 90%	.01¾	.02	.01⅞	.02	.01¾	
Grade BB, 84-92, 375 e.p., rec. 85%	.01¾		.01¾		.01⅝	
Grade C, 80-92, 375 e.p., rec. 78%	.01¼		.01¼		.01⅝	
CALIFORNIA—						
75-78 375-390 endpoint	.02	.02¾	.02	.02¾	.01¾	.02¾
CHICAGO DISTRICT (Based on Group 3)—						
Grade A, 72-79.9, 375 e.p., rec. 90%	.02		.02		.01⅞	.02
Grade AA, 80-87.9, 375 e.p., rec. 90%	.01⅝		.01¾		.01⅝	
Grade BB, 84-92, 375 e.p., rec. 85%	.01½		.01½		.01½	

BURNING OIL

	June 9		June 2		May 26	
OKLAHOMA (Group 3)—						
41-43 water white kerosene	.02¼	.02½	.02¼	.02½	.02⅜	.02½
42-44 water white kerosene	.02⅜	.02½	.02⅜	.02¾	.02½	.02¾
NORTH TEXAS—						
41-43 water white kerosene	.02⅛	.02⅜	.02¼	.02½	.02⅜	.02½
40-41 water white kerosene	.02⅛		.02⅛	.02⅜	.02¼	.02⅜
***NORTH LOUISIANA—**						
41-43 water white kerosene	.02¾		.02¾	.03	.02⅞	.03
***ARKANSAS—**						
41-43 water white kerosene	.02¾		.02¾	.03	.02¾	.03
PENNSYLVANIA—						
43 Kerosene prime white	.03⅜		.03⅞		.04	
45 Kerosene water white	.03⅞	.04¼	.04		.04¼	
46 Kerosene water white	.04½		.04½		.04½	
CALIFORNIA—						
38-40 water white Kero. (high burning test)	.03½	.04½	.04	.04½	.04	.04½
CHICAGO DISTRICT (Based on Group 3)—						
41-43 water white kerosene	.02¼	.02⅜	.02⅜	.02½	.02⅜	.02⅝
42-44 water white kerosene	.02⅝	.02½	.02½	.02¾	.02½	.02¾
GULF COAST (Export)—						
41-43 prime white	.03¾		.04		.04	
44 water white	.04¾		.05		.05	

*Louisiana, Arkansas, Mississippi and East Texas delivery.

FUEL OIL

	June 9		June 2		May 26	
OKLAHOMA (Group 3)—						
Below 18 gravity Fuel Oil, per bbl.	.25	.30	.25	.30	.27½	.35
18-22 Fuel Oil, per bbl.	.30	.35	.30	.35	.32½	.40
20-22 Fuel Oil, per bbl.	.30	.35	.30	.35	.35	.40
22-26 Fuel Oil, per bbl.	.35	.40	.35	.40	.40	.45
24-26 Fuel Oil, per bbl.	.40	.50	.40	.50	.42½	.50
26-30 Fuel Oil, per bbl.	.45	.55	.45	.55	.45	.55
28-30 Fuel Oil, per bbl.	.50	.60	.50	.60	.50	.60
32-36 Gas Oil (industrial)	.00¾	.01	.00¾	.01	.00⅞	.01⅛
32-36 Gas Oil (straw color, high cold test)	.00¾	.01	.00¾	.01	.00⅞	.01⅛
32-36 Gas Oil (straw color, low cold test)	.01⅜	.01½	.01¼	.01½	.01½	.01½
36-38 Distillate	.01⅜	.01⅝	.01⅜	.01⅝	.01⅜	.01⅝
38-40 Straw Distillate	.01½	.01¾	.01½	.01¾	.01½	.01¾

Note—Fuel oils over 40 cold test generally 5 to 10 cents per barrel less.

NORTH TEXAS—						
Below 20 gravity Fuel Oil, per bbl.	.22½	.27½	.25	.35	.25	.35
24-26 Fuel Oil, per bbl.	.30	.40	.30	.40	.35	.40
32-36 Gas Oil (industrial)	.00¾	.01	.00¾	.01	.00¾	.01
38-40 Straw Distillate	.01¼	.01½	.01¼	.01½	.01⅜	.01¾
***NORTH LOUISIANA—**						
18-20 Fuel Oil, per bbl.	.55	.60	.55	.60	.55	.60
30-32 Gas Oil (low cold test)	.01⅞	.02	.02⅛	.02¼	.02⅛	.02¼
***ARKANSAS—**						
33-36 Distillate	.02¼	.02½	.02¼	.02½	.02¼	.02½
30-32 Gas Oil	.01¾	.02	.02	.02⅛	.02	.02⅛
16-22 Refinery Fuel Oil, per bbl.	.50	.55	.50	.55	.50	.55
GULF COAST (South Texas)—						
Gas Oil	.02½	.02¾	.02½	.02¾	.02½	.02¾
Bunker C Fuel (cargo lots), per bbl.	.60		.60	.62½	.60	.62½
Bunker C Fuel (small lots)	.70		.80		.80	
PENNSYLVANIA—						
30-34 Fuel Oil	.02½		.02½		.02½	
36-40 Fuel Oil	.02⅝		.02⅝	.02¾	.02⅝	.02¾
CALIFORNIA—						
42-45 480 endpoint engine distillate	.03	.03½	.03	.03½	.03	.04
15-19 Fuel Oil, Bunker (at tidewater), bbl.	.55	.85	.60	.90	.60	.90
15-19 Fuel Oil (cargo lots, at tidewater), bbl.	.55	.80	.55	.85	.55	.85
†15-19 Fuel Oil, f.o.b. tank cars	.30	.75	.30	.70	.30	.70
27 plus Diesel, per bbl.	.70	.95	.70	.95	.70	.95
30-34 Gas Oil	.70	.95	.70	.95	.70	.95
CHICAGO DISTRICT (Based on Group 3)—						
18-22 Fuel Oil, per bbl.	.25	.30	.30	.35	.30	.35
22-26 Fuel Oil, per bbl.	.30	.35	.35	.40	.35	.40
28-30 Fuel Oil, per bbl. (zero)	.50	.55	.60	.65	.60	.65
32-36 Gas Oil (industrial)	.00⅞	.01⅛	.00⅞	.01⅛	.00⅞	.01⅛
32-36 Gas Oil (zero)	.01¼	.01½	.01¼	.01½	.01¼	.01½
38-40 Straw Distillate	.01¼	.01½	.01½	.01¾	.01½	.01¾

*Louisiana, Arkansas, Mississippi and East Texas delivery. †Lowest priced fuel oil has high sulphur content.

LUBRICATING OIL AND WAX

	June 9		June 2		May 26	
OKLAHOMA (Group 3)—						
100 vis., 2 color, 20-25 cold test	.04½	.04¾	.05		.05	
100 vis., 3 color, 20-25 cold test	.04¼	.04½	.04¾	.05	.04¾	.05
150 vis., 3 color, 20-25 cold test	.06¾	.07¼	.07	.07½	.07	.07½
150 vis., 4 color, 20-25 cold test	.06	.06½	.06	.06½	.06	.06½
180 vis., 3 color, 23-28 cold test	.07¾	.08¼	.08	.08½	.08	.08½
180 vis., 4 color, 23-28 cold test	.07½	.08¼	.07½	.08½	.07½	.08½
180 vis., 5 color, 23-28 cold test	.07¼	.07½	.07¼	.07½	.07¼	.07½
200 vis., 3 color, 23-28 cold test	.08¾	.09½	.08¾	.10	.09½	.10
200 vis., 4 color, 23-28 cold test	.08½	.09¼	.08½	.09¼	.09	.09½
200 vis., 5 color, 23-28 cold test	.08	.08½	.08	.08½	.08	.08½
240 vis., 3 color, 25-30 cold test	.10¾	.11¼	.11	.11½	.11	.11½
240 vis., 4 color, 25-30 cold test	.10	.10½	.10	.10½	.10	.10½
240 vis., 5 color, 25-30 cold test	.09½	.10	.09½	.10	.09½	.10
280 vis., 3 color, 25-30 cold test	.12¼	.12¾	.12½	.13	.12½	.13
280 vis., 4 color, 25-30 cold test	.11¼	.11¾	.11½	.12	.11½	.12
280 vis., 5 color, 25-30 cold test	.10¾	.11½	.11	.11½	.11	.11½
Cylinder Stocks:						
600, steam refined, light green	.04	.05½	.04½	.05½	.04½	.05½
600, steam refined, dark green	.02½	.03	.03	.03½	.03	.03½
190-200 vis., D color, Bright Stocks	.17		.18		.18	
150-160 vis., D color, Bright Stocks 0-10 c.t.	.13½	.14	.14½	.15	.14½	.15
150-160 vis., D color, Bright Stocks 10-25 c.t.	.12¾	.13	.13¾	.14½	.13¾	.14½
150-160 vis., D color, Bright Stocks 25-40 c.t.	.12½	.13	.13	.14	.13½	.14
150-160 vis., E color, Bright Stocks	.12¼	.12½	.13	.13½	.13¼	.13½
Waxes:						
124-126 White Crude Scale Wax	.01¾	.02	.01¾	.02	.01¾	.02

All bright stock prices are for domestic movement.

PENNSYLVANIA—						
34 Neutral	.05½		.05½		.05½	
34 Sundebloom	.05		.05¼		.05¼	
36 Miners' Neutral	.05½		.05½		.05½	
150, 3 color	.15½		.15½	.16	.16	
180, 3 color	.18	.19	.18		.18	.18½
200, 3 color	.21		.21		.21	.21½
220, 3 color	.23	.26½	.23½	.26	.23½	.26½
600, steam refined	.07½	.08	.07¾	.08	.08	
650, steam refined	.10¾	.11¼	.10¾	.11½	.11	.11½
600, Pennsylvania Flash	.11½	.12½	.11½	.12	.11½	.12½
600, E filtered	.11	.12	.11	.11½	.11	.12
600, D filtered, Oil City	.15	.16	.15	.16	.15	.17
Pennsylvania Bright Stocks below 35 c.t.	.17		.17		.17½	.18
Pennsylvania Bright Stocks above 35 c.t.	.16¼		.16½		.17	
*122-124 White Crude Scale Wax	.02		.02		.02	
124-126 White Crude Scale Wax	.02		.02		.02	

*At New York.

GULF COAST (South Texas)—						
100 vis., 2-2½ color, pale oil	.05½		.05½	.06	.05½	.06
200 vis., 3 color, pale oil	.07½	.07¾	.07¾	.08	.07¾	.08
300 vis., 3 color, pale oil	.08¾	.09	.09	.09¼	.09	.09¼
500 vis., 3½ color, pale oil	.10	.10½	.10¼	.10½	.10¼	.10½
750 vis., 3½ color, pale oil	.11½	.12	.11¾	.12	.11¾	.12
1,200 vis., 3½ color, pale oil	.14	.14½	.14¼	.14½	.14¼	.14½
2,000 vis., 4 color, pale oil	.15	.15½	.15¼	.15½	.15¼	.15½
200 vis., 5-6 color, red oil	.06¾	.07	.07	.07¼	.07	.07½
300 vis., 5-6 color, red oil	.08	.08½	.08¼	.08½	.08¼	.08½
500 vis., 5-6 color, red oil	.09¼	.09¾	.10½	.11¼	.10½	.11¼
1,200 vis., 5-6 color, red oil	.13	.13½	.13¼	.13½	.13¼	.13½
2,000 vis., 6 plus color	.15	.15½	.15¼	.15½	.15¼	.15½
CALIFORNIA—						
130 vis., 2½-3 color	.09	.09½	.09	.09½	.09	.09½
200 vis., 2½-3 color	.10	.10¾	.10	.10¾	.10	.10¾
300 vis., 3-3½ color	.10¾	.11½	.10¾	.11½	.10¾	.11½

REFINERY AND CRUDE PRICES

Quotations on refined products are for interstate or export movement unless otherwise noted.

350 vis., 3½-4 color	.11½	.11¾	.11½	.11¾	.11½	.11¾
400 vis., 3½-4 color	.12¼	.12¾	.12¼	.12¾	.12¼	.12¾
Red Neutral:						
200 vis., 4½-5 color	.09½	.10	.09½	.10	.09½	.10
300 vis., 5-6 color	.10¼	.10¾	.10¼	.10¾	.10¼	.10¾
400 vis., 5-6 color	.11	.12	.11	.12	.11	.12
500 vis., 4½-5 color	.12¼	.13	.12¼	.13	.12¼	.13
500 vis., 5-6½ color	.12	.12¾	.12	.12¾	.12	.12¾
600 vis., 6½ plus color	.13	.14	.13	.14	.13	.14

Note—Bright stocks are not manufactured commercially on the Pacific Coast.

NEW YORK (BAYONNE) REFINERY PRICES

	June 9		June 2		May 26	
Gasoline, U. S. Motor, 58-60, 437 e.p.	.05¾	.06½	.05¾	.06½	.05¾	.06½
Kerosene, water white, 41-43	.05¼	.05½	.05½	.05½	.05¼	.05½
*Fuel Oil, Bunker "C," 41-43	.85		.95		.95	
†Fuel Oil, Diesel, 28-30, per bbl.	1.55		1.65		1.65	
Gas Oil, 28 gravity plus	.04		.04		.04	
25 pale Paraffin Oil, tank car	.10¼		.10¼		.10¼	
28 pale Paraffin Oil, tank car	.07¼		.07¼		.07¼	
280 red Paraffin Oil, tank car	.12½		.12½		.12½	
250 red Paraffin Oil, tank car	.11½		.11½		.11½	
225 red Paraffin Oil, tank car	.10		.10		.10	
200 red Paraffin Oil, tank car	.09¼		.09¼		.09¼	
Domestic heating oil, min. 32 grav., tank car	.04		.04		.04	
Refined Wax:						
120-122 a.m.p., per lb.	.02⅞		.02⅞		.02⅞	
125-127 a.m.p., per lb.	.03⅛		.03⅛		.03⅛	
130-132 a.m.p., per lb.	.03⅝		.03⅝		.03⅝	
133-135 a.m.p., per lb.	.04⅛		.04⅛		.04⅛	
135-137 a.m.p., per lb.	.04⅝		.04⅝		.04⅝	
Petrolatum in barrels in carload lots, per pound:						
Dark Green	.01¾		.01¾		.01¾	
Amber	.03		.03		.03	
Extra Amber	.03¼		.03¼		.03¼	
Cream	.06		.06		.06	
Lily White	.06¾		.06¾		.06¾	
Snow White	.08		.08		.08	

*Lighterage 5 cents a barrel extra. †Lighterage 6.5 cents a barrel.

NEW YORK (BAYONNE) EXPORT PRICES

	June 9		June 2		May 26	
600, steam refined cylinder stocks, in bbls.	.16	.16¼	.16	.16¼	.16	.16¼
635, steam refined	.16½	.17	.16½	.17	.16½	.17
650, steam refined	.19	.20	.19	.20	.19	.20
600, Pennsylvania Flash	.19½	.20	.19½	.20	.19½	.20
630, Pennsylvania Flash	.25¾	.26	.25¾	.26	.25¾	.26
600, Warren E	.19	.20	.19½		.19½	
600, Oil City E	.18	.18½	.18½		.18½	
Light 140-150 Bright Stocks	.25	.26	.25	.26	.25	.26
Dark 140-150 Bright Stocks	.24	.25	.24	.25	.24	.25

LOS ANGELES EXPORT PRICES

	June 9		June 2		May 26	
Kerosene, water white	.04	.04½	.04	.04½	.04	.04½
*U. S. Motor Gasoline, 53-55, 437 e.p.	.03½	.04	.03½	.04	.03½	.04
*58-62, 400 endpoint gasoline	.03½	.04¼	.03½	.04½	.03½	.04½

*For coastwise shipment.

CRUDE OIL PRICES

OKLAHOMA, KANSAS, NORTH AND EAST CENTRAL TEXAS

Rusk County, Tex. (April 6, 1931)* ..... $ .25
Corsicana heavy (June 3, 1931)† ..... .22
Other fields ..... See gravity table

*Posted by Panola Pipe Line Co. †Magnolia Petroleum Co.

TEXAS PANHANDLE

Gray County, Wheeler County and Carson-Hutchinson Counties ..... See gravity table

WEST TEXAS

Iatan and Westbrook ..... Same as North Texas
Crane, Upton, Crockett, Howard, Glasscock, Ector, Winkler and Pecos Counties* ..... $ .25
Lea County, N. Mex.† ..... .25

*The Texas Company, June 2, 1931. All other companies, June 3, 1931. †The Texas Company, June 2, 1931. All other companies, June 3, 1931.

ARKANSAS

Smackover, Ark. (all grades) (June 2, 1931)* ..... .37
Smackover, Ark. (all grades) (June 3, 1931)† ..... .25
Bellevue, La. (June 3, 1931) ..... .25
Urania (June 3, 1931) ..... .30
Calion, Ark., heavy (June 3, 1931)‡ ..... .37
East El Dorado, Ark. (June 3, 1931) ..... .25
Stephens, Ark. (June 3, 1931) ..... .20
Other fields ..... See gravity table

*Posted by The Texas Company on June 2, 1931, and by Gulf Refining Co. on June 3. †Posted by Standard Oil Co. of Louisiana and Magnolia Petroleum Co. on June 3. Bellevue posted by Standard Oil Co. of Louisiana and Magnolia Petroleum Co.; Urania by Louisiana Oil Refining Co. Calion by Gulf Refining Co.; East El Dorado by Gulf Refining Co. and Magnolia Petroleum Co. Stephens posted by Louisiana Oil Refining Co.

GULF COAST

Grade A and Grade B classifications discontinued ..... See gravity table
Jennings, La. (June 3, 1931)* ..... $ .40
Lockport, La. (June 3, 1931)† ..... See Gulf Coast gravity table
Refugio light ..... See gravity table
Refugio heavy‡ ..... .44
Markham (June 2, 1931)§ ..... .37
High Island (June 3, 1931)¶ ..... .40

*Gulf Refining Co. †Vacuum Oil Co. ‡Humble Oil & Refining Co. §The Texas Company. ¶Gulf Pipe Line Co.

SOUTH CENTRAL AND SOUTHWEST TEXAS

Darst Creek (July 3, 1931)* ..... .37
Luling (July 3, 1931)† ..... .35
Mirando (July 3, 1931)‡ ..... .44
Pettus (July 3, 1931)‡ ..... .50
Salt Flat (July 3, 1931)‡ ..... .37
Thrall§ ....
Lytton Springs (Lockhart) See gravity table
Dobrowolski (Oct. 25, 1930)¶ .....
Same as Mid-Continent gravity scale up to and including 35-38.9°
Somerset .....
Same as Mid-Continent gravity scale up to and including 38-38.9°

*The Texas Company. †Magnolia Petroleum Co. ‡Humble Oil & Refining Co. §Thrall prices same as North Central Texas less 19½ cents per cwt. freight. ¶Grayburg Oil & Refining Co., Pioneer Oil & Refining Co. and Texas Petroleum Products Co. ‖Pioneer Oil & Refining Co.

ROCKY MOUNTAIN STATES
Ohio Oil Co.-Midwest Refining Co.

Ilies (Mar. 7, 1931):
38 gravity and above ..... $ .72
Under 38 gravity ..... .50
Fort Collins (June 2, 1931) ..... .30
Florence (June 2, 1931) ..... .27
Wellington (June 2, 1931) ..... .25
Dutton Creek (Oct. 28, 1930) 1.01
Rock Creek, Wyo. (June 2, 1931) ..... .45
Frannie, light (June 2, 1931) ..... .35
Frannie, heavy (June 2, 1931) ..... .25
Salt Creek ..... Mid-Continent gravity table
Big Muddy (June 2, 1931) ..... .40
Grass Creek, heavy (June 2, 1931) ..... .62
Grass Creek, light (June 2, 1931) ..... .62
Elk Basin (June 2, 1931) ..... .62
Lance Creek (June 2, 1931) ..... .75
Poison Spider (Mar. 5, 1931) ..... .70
Notches (Mar. 14, 1927) ..... .65
Hudson (June 2, 1931) ..... .65
Lander (Mar. 5, 1931) ..... .40
Rex Lake (Feb. 22, 1930) 1.10
Osage (Apr. 15, 1931) ..... .93
Lost Soldier (Mar. 5, 1931) ..... .55
Hamilton Dome (Mar. 14, 1927) ..... .85
Greybull (Oct. 28, 1930) 1.25
Torchlight (Oct. 28, 1930) 1.25
Cat Creek (June 3, 1931) ..... .60
Pondera, Mont. (June 3, 1931) ..... .75
Sunburst, Mont. (June 2, 1931) ..... .85
Hogback, N. Mex. (June 3, 1931) ..... .65
Artesia, N. Mex. (June 3, 1931) ..... .25
Lea County, N. Mex. (June 3, 1931) ..... .25
Border, Mont. 1.55
Red Coulee, Alberta 1.55

Note—Salt Creek, Cat Creek, Dallas-Derby, Hudson, Greybull and Hogback posted by Midwest Refining Co. and the remainder by the Ohio Oil Co. Both companies posted Grass Creek light and Elk Basin. Lost Soldier posted by Producers & Refiners Corp. Artesia posted by Continental Oil Co. Border and Red Coulee posted by Imperial Refining Co. Ohio Oil Co. ceased posting Artesia on March 5, 1931. Lea County posted by Humble Oil & Refining Co. Fort Collins, Wellington, Orchard, Florence, Rattlesnake and Table Mesa by the Continental Oil Co. Osage posted by Arro Oil & Refining Co.

MIDDLE WESTERN STATES
Ohio Oil Co.
(Effective June 2, 1931)

Lima ..... $ .70
Wooster ..... .72
Illinois ..... .55
Indiana ..... .55
Princeton ..... .55
Plymouth ..... shut in
Western Kentucky ..... .50
Midland, Mich.* (June 1, 1931) ..... .62
Dundee, Mich† .....
Same as Stanolind Crude Oil Purchasing Co.'s Mid-Continent gravity scale
Upper and Lower Traverse Sands, Mich.† .....Same as Mid-Continent gravity scale
Somerset, Ky. (June 5, 1931) ..... .55
Oil City, Ky. (June 6, 1931) ..... .50

(Continued on Page 118)

CRUDE OIL GRAVITY TABLE

	Okla., Kans. North and Central Texas, East Central Texas 1	East Texas 2	N. La.-Ark. 3	Carson and Hutchinson Counties, Tex. 4	Gray County, Texas 5	Salt Creek, Wyo. 6	Gulf Coast 7	Stephens, Ark. 8
Below 25 degrees	...	...	...	...	...	...	.44	...
25 to 25.9	...	...	...	...	...	...	.45	...
26 to 26.9	...	...	...	...	...	...	.46	...
27 to 27.9	...	...	...	...	...	...	.47	...
28 to 28.9	...	...	...	...	...	...	.48	...
Below 29	.25	...	.25	...	...	...	...	.38
29 to 29.9	.26	...	.26	...	...	.26	.49	.41
30 to 30.9	.27	...	.27	...	...	.27	.50	.41
31 to 31.9	.28	...	.28	...	...	.28	.51	.41
32 to 32.9	.29	...	.29	...	...	.29	.52	.41
33 to 33.9	.30	...	.30	...	...	.30	.53	...
34 to 34.9	.31	...	.31	...	...	.31	.54	...
Below 35	...	.25	...	.21	.24	...	...	...
35 to 35.9	.32	.27	.32	.22	.25	.32	.55	...
36 to 36.9	.33	.29	.33	.23	.26	.33	.56	...
37 to 37.9	.34	.31	.34	.24	.27	.34	.57	...
38 to 38.9	.35	.33	.35	.25	.28	.34	.58	...
39 to 39.9	.36	.35	.36	.26	.29	.34	.59	...
40 and over	.37	.37	.37	.27	.30	.34	.60	...

Column 1—Stanolind Crude Oil Purchasing Co., H. F. Wilcox Oil & Gas Co., Sinclair Refining Co., Barnsdall Refineries, Inc., Mid-Continent Petroleum Corp., Champlin Refining Co., Mid-Kansas Oil & Gas Co., Eason Oil Co., Standard Oil Co. of Kansas, Continental Oil Co., Pure Oil Co., Tidal Oil Co., Tidal Western Oil Co. and Empire Pipe Line Co., all on June 1. Magnolia Petroleum Co. on June 2, with the exception that Magnolia posted below 26 degrees at 22 cents; 26-26.9 at 23 cents; 27-27.9, 24 cents. The Empire Pipe Line Co. adopted the Magnolia's schedule on lower grades in Carter County, Oklahoma. The Texas Company adopted Stanolind schedule on June 2, Gypsy Oil Co., June 2; Gulf Pipe Line Co., June 3; and Humble Oil & Refining Co., June 3.

Column 2—The Texas Company on June 2, and Humble Oil & Refining Co. and Arkansas Fuel Oil Co. on June 3 announced the withdrawal of their posted prices in East Texas. Above posted prices are of Sinclair Refining Co., Gulf Pipe Line Co. and Magnolia Petroleum Co., effective May 26, 1931.

Column 3—The Texas Company, June 2; Standard Oil Co., Magnolia Petroleum Co. and Gulf Refining Co., June 3.

Column 4—The Texas Company, June 2, 1931; Humble Oil & Refining Co., Gulf Pipe Line Co., Continental Oil Co. and Magnolia Petroleum Co., June 3.

Column 5—The Texas Company, June 2; Humble Oil & Refining Co., Gulf Pipe Line Co., Magnolia Petroleum Co., and H. F. Wilcox Oil & Gas Co., June 3.

Column 6—Midwest Refining Co., June 1.

Column 7—Posted by The Texas Company, June 2; Gulf Pipe Line Co., Humble Oil & Refining Co., Vacuum Oil Co. Sun Oil Co. posted same prices on June 3 up to and including 35 gravity at 55 cents, but will pay only 55 cents for oil above 35 gravity.

Column 8—Atlantic Oil Producing Co., March 10, 1931.

CALIFORNIA CRUDE OIL PRICES

(Posted by Union Oil Co. March 30 and the Standard Oil Co. of California March 31)

	Alamitos Hts., Signal Hill, Seal Beach, Torrance, Athens, Rosecrans, Dominguez, Santa Fe Springs, Montebello, Huntington Beach, East Coyote, Richfield, Brea-Olinda	Santa Paula	Oreut	Conlinga, McKittrick, Kern River, Midway-Sunset, Elk Hills, Buena Vista Hills, Lost Hills
11 to 13.9	....	....	....	$ .50
14 to 14.9	$ .65	$ .60	$ .55	.55
15 to 15.9	.65	.60	.55	.55
16 to 16.9	.65	.60	.55	.55
17 to 17.9	.65	.60	.55	.55
18 to 18.9	.65	.60	.55	.55
19 to 19.9	.65	.60	.55	.55
20 to 20.9	.65	.58	.53	.53
21 to 21.9	.62	.56	.51	.51
22 to 22.9	.59	.53	.49	.49
23 to 23.9	.58	.50	.47	.47
24 to 24.9	.53	.47	.45	.45
25 to 25.9	.50	.44	.43	.43
26 to 26.9	.47	.41	.41	.41
27 to 27.9	.44	.38	.39	.39
28 to 28.9	.41	.35	.37	.37
29 to 29.9	.38	...	.35	.35
30 to 30.9	.35	...	...	...

For the time being the Union Oil Co. and the Standard Oil Co. will not post a schedule of crude oil prices for the Playa del Rey and Kettleman Hills Fields.

TANK WAGON MARKETS

Tank wagon quotations for gasoline and kerosene in United States as furnished by the larger marketing concerns June 9

ALL TANK WAGON AND SERVICE STATION QUOTATIONS INCLUDE TAXES

STANDARD OIL CO. (INDIANA)

	Gasoline			Kero.
	Tank wagon	Service station	Incl'ds tax	tank wagon
Chicago	14.0	14.0	3.0	9.0
Decatur, Ill.	14.4	14.4	3.0	9.0
E. St. Louis	12.7	13.7	3.0	8.2
Joliet	14.4	14.4	3.0	9.0
Peoria	14.4	14.4	3.0	9.0
Quincy	14.2	14.2	3.0	8.8
Davenport, Ia.	14.5	14.5	3.0	9.3
Des Moines	14.5	14.5	3.0	9.3
Keokuk	14.5	14.5	3.0	9.3
Sioux City	14.1	14.1	3.0	8.9
Duluth, Minn.	15.5	15.5	3.0	9.9
Mankato	15.1	15.1	3.0	9.7
Minneapolis	15.3	15.3	3.0	9.9
La Crosse, Wis.	16.3	16.3	4.0	10.0
Milwaukee	15.1	15.1	4.0	8.9
Madison	15.3	15.3	4.0	9.1
Detroit, Mich.	14.8	14.8	3.0	10.7
Grand Rapids	14.7	14.7	3.0	10.6
Saginaw	14.9	14.9	3.0	10.8
Evansville, Ind.	15.1	15.1	4.0	9.9
Indianapolis	15.3	15.3	4.0	10.1
South Bend	15.4	15.4	4.0	10.2
Fargo, N. D.	16.9	16.9	3.0	11.9
Huron, S. D.	16.3	16.3	4.0	10.7
Sioux Falls	15.8	15.8	4.0	10.4
K. C., Mo.	13.9	13.9	3.0	7.6
Springfield*	13.9	13.9	3.0	8.5
St. Louis*	12.9	13.9	3.5	8.3
St. Joseph	13.5	13.5	3.0	7.5
Wichita, Kans.	13.8	13.8	3.0	7.8
Bartlesville, Ok.	13.0	16.0	3.0	7.5

*State tax 2 cents, remainder city tax.

A third grade of gasoline, "Stanolind Blue," is sold at all major points at a price 1 cents or more below the price on the regular grade.

Effective April 15—Discounts on Q.D.A. on 1,000 gallons or more per month throughout territory: Red Crown Ethyl gasoline, 3 cents off tank wagon price; Red Crown gasoline, 2½ cents off tank wagon price; Stanolind Blue gasoline, 1 cent off tank wagon price.

Discount in Chicago division on 1,000 gallons or more per month: Red Crown Ethyl gasoline, 4 cents off tank wagon price; Red Crown gasoline, 2½ cents off tank wagon price; Stanolind Blue gasoline, 2 cents off tank wagon price.

Discounts on resellers authorized agent's agreement: Same amounts as above except made off service station price instead of tank wagon price.

PACIFIC COAST TERRITORY

	Gasoline			Kero.
	Wh'la'e price	Retail* price	Incl'ds tax	tank wagon
Fresno	13.0	10.0	3.0	17.0
San Francisco	14.0	11.0	3.0	15.5
Los Angeles	13.5	10.5	3.0	15.5
Reno, Nev.	22.0	20.0	4.0	19.0
Portland, Ore.	15.5	12.5	4.0	16.5
Seattle, Wash.	16.0	13.0	5.0	16.5
Tacoma	16.0	13.0	5.0	16.5
Spokane	20.0	17.0	5.0	20.5
Phoenix, Ariz.	14.0	15.5	5.0	20.0

Above prices are at company's plant or depots as company does not operate stations. A 6-cent per gallon discount is given dealers and customers taking tank wagon lots except in Phoenix where the discount is 3 cents plus a 2-cent special temporary discount subject to withdrawal at any time.

*Retail prices posted by Standard Stations, Inc., a subsidiary.

SOUTHWESTERN DISTRICT

Magnolia Petroleum Co.

	Gasoline			Kero.
	Tank wagon	Service station	Incl'ds tax	tank wagon
Dallas, Tex.	13.0	16.0	4.0	9.0
Fort Worth	13.0	14.0	4.0	8.0
Houston	14.0	18.0	4.0	11.0
San Antonio	14.0	18.0	4.0	10.0
El Paso	14.0	18.0	4.0	12.0
Texarkana	16.0	16.0	4.0	11.0
Muskogee, Ok.	13.0	15.0	5.0	8.0
Okla. City	10.0	12.0	5.0	7.0
Tulsa	10.0	12.0	5.0	8.0
Ft. Smith, Ark.	15.0	16.0	5.0	11.0
Little Rock	16.0	16.0	5.0	11.0

One-cent rebate made from posted station prices to cash purchasers in Louisiana, Arkansas and Tennessee.

NEW YORK AND PART OF NEW ENGLAND DISTRICT

Standard Oil Co. (New York)

	Gasoline			Kero.
	Tank wagon	Service station	Incl'ds tax	tank wagon
Albany, N. Y.	16.6	17.6	2.0	15.6
New York*	15.3	15.3	2.0	14.3
Buffalo	15.8	15.8	2.0	14.8
Rochester	16.0	16.0	2.0	14.0
Syracuse	16.8	16.8	2.0	14.8
Boston, Mass.	16.5	16.5	3.0	13.5
Augusta, Me.	18.8	18.8	4.0	14.8
Manch'tr, N. H.	18.4	18.4	4.0	14.0
Burlington, Vt.	19.3	19.3	4.0	15.3

*Prices in steel barrels.

SOUTHERN DISTRICT

Standard Oil Co. (Kentucky)

	Gasoline			Kero.
	Tank wagon	Service station	Incl'ds tax	tank wagon
Atlanta, Ga.	18.0	18.0	6.0	12.5
Augusta	18.0	20.0	6.0	14.0
Macon	18.0	18.0	6.0	13.0
Savannah	18.0	18.0	6.0	12.0
Birm'ham, Ala.	17.0	19.0	5.0	13.0
Mobile	17.0	19.0	4.0	13.0
Montgomery	17.0	17.0	4.0	13.5
Clarks'le, Miss.	18.0	20.0	5.0	13.5
Jackson	16.0	18.0	5.0	11.0
Natchez	18.0	20.0	5.0	13.5
Gulfport	16.0	16.0	5.0	13.5
Vicksburg	16.0	18.0	5.0	11.0
Jack'ville, Fla.	17.0	18.0	6.0	12.0
Miami	18.0	20.0	6.0	13.0
Pensacola	16.0	18.0	6.0	13.0
Tampa	17.0	18.0	5.5	12.0
Lexington, Ky.	17.0	18.0	5.0	12.0
Covington	16.0	17.0	5.0	11.0
Louisville	16.0	17.0	5.0	11.0
Ashland	17.0	19.0	5.0	13.0
Paducah	17.0	18.0	5.0	11.0
Bowling green	19.0	21.0	5.0	14.5
Corbin	18.0	19.0	5.0	15.0

A third grade, "Kyso Green," is sold at a price generally 3 cents below the price on the regular grade.

In addition to the state tax of 4 cents on gasoline, Montgomery has city tax of 1 cent on gasoline and one-half cent on kerosene. Kerosene prices in Georgia include 1-cent tax. In Florida, an inspection fee of 0.125 cent; in Alabama, an inspection fee of one-half cent on kerosene and one-fourth cent on gasoline. To Pensacola, Montgomery, Birmingham and Mobile state taxes add 1-cent levy tax. To Gulfport state tax add privilege tax of 2 cents.

Effective April 2, price to dealers 3 cents under posted tank wagon price.

CENTRAL SOUTH DISTRICT

Standard Oil Co. (Louisiana)

	Gasoline			Kero.
	Tank wagon	Service station	Incl'ds tax	tank wagon
N. Orleans, La.	15.5	16.5	6.0	13.0
Baton Rouge	15.0	16.0	5.0	13.0
Alexandria†	16.0	17.0	6.0	12.0
Lafayette*	16.0	17.0	6.0	13.0
Lake Charles*	16.0	17.0	6.0	12.0
Shreveport	15.0	16.0	5.0	12.0
Knoxville, Tenn.	17.5	18.5	5.0	13.5
Memphis	13.0	14.0	5.0	10.0
Chatanooga	17.0	18.0	5.0	13.0
Nashville	16.5	17.5	5.0	12.5
Bristol	18.0	19.0	5.0	14.0
Lt. Rock, Ark.	16.0	17.0	6.0	11.0

*Includes city tax of 1 cent. Louisiana kerosene prices include 1-cent state tax. New Orleans kerosene price also includes 1-cent city tax.

†Gasoline price at Alexandria includes 1-cent tax in parish of Rapides.

Two-cent discount off gasoline tank wagon price to dealers and commercial accounts.

NEBRASKA

Standard Oil Co. (Nebraska)

	Gasoline			Kero.
	Tank wagon	Service station	Incl'ds tax	tank wagon
Omaha	12.9	12.9	4.0	9.25
McCook	16.0	17.75	4.0	10.75
Norfolk	15.75	16.75	4.0	9.75
N. Platte	16.75	17.75	4.0	10.50
Scottsbluff	16.0	16.0	4.0	10.25

Note—Dealers' discounts allowed as follows: Red Crown Ethyl, 3 cents off station price; Red Crown, 3½ cents off station price; third grade, 1 cent off station price.

OHIO

Standard Oil Co. (Ohio)

	Gasoline			Kero.
	Tank wagon	Service station	Incl'ds tax	tank wagon
Ohio points*	16.0	17.0	4.0	†13.0

*Corrected price since March 5, 1931. Dealers and commercial accounts 2 cents under tank wagon.

†Service station price 14 cents.

NAPHTHA

	Tank wagon	Tank car
Oleum spirits	12.0	8.0
V.M.&P. naphtha	14.0	9.5
Cleaners' naphtha	16.2	11.0
Stanisol	16.2	11.0

Tank wagon prices f.o.b. Chicago; tank car prices f.o.b. Whiting.

STANOLIND FURNACE OIL IN CHICAGO

All dumps of 50 gallons or more..... .07

Note—Outside Chicago furnace oils discount of 1 cent per gallon is given on deliveries of 100 to 349 gallons and 1½ cents on deliveries of 350 gallons or more.

PENNSYLVANIA-DELAWARE AND PART OF NEW ENGLAND

Atlantic Refining Co.

	Gasoline			Kero.
	Tank wagon	Service station	Incl'ds tax	tank wagon
Pittsburgh, Pa.	*12.0	*14.0	...	12.0
Philadelphia	*12.0	*14.0	...	12.0
Scranton	*12.0	*14.0	...	12.0
Allentown	*12.0	*14.0	...	12.0
Altoona	*12.0	*14.0	...	12.0
Erie	*12.0	*14.0	...	12.0
Dover, Del.	15.0	17.0	3.0	12.0
Wilmington	15.0	17.0	3.0	12.0
Springf'd, Mass.	14.5	16.5	3.0	11.0
Fall River	14.1	16.1	...	11.0
Worcester	14.3	16.3	3.0	11.0
Boston	13.5	15.5	3.0	11.0
Providence, R.I.	13.7	15.7	3.0	11.0
Hartford, Conn.	14.5	16.5	3.0	10.0
New Haven	14.6	16.6	3.0	10.0

*Does not include tax of 3 cents in Pennsylvania. Pennsylvania tax is collected by the dealer and paid by him direct to the State. Atlantic Refining Co. recognizes a 2-cent per gallon discount on gasoline from its posted tank wagon markets on sales to dealers for purpose of resale. Atlantic Refining Co. also recognizes a maximum discount of 3 cents per gallon on gasoline to commercial accounts under contract for one year.

ATLANTIC COAST DISTRICT

Standard Oil Co. (New Jersey)

	Gasoline			Kero.
	Tank wagon	Service station	Incl'ds tax	tank wagon
Atl'tic City, N.J.	13.7	15.7	3.0	11.5
Newark	12.7	14.7	3.0	10.5
Annapolis, Md.	15.2	16.3	4.0	11.0
Baltimore	14.4	16.4	4.0	8.5
Cumberland	16.2	17.2	4.0	12.0
Wash'gton, D.C.	12.9	13.9	3.0	10.0
Danville, Va.	17.0	18.0	5.0	11.5
Norfolk	15.5	16.5	5.0	10.0
Petersburg	16.5	17.5	5.0	11.3
Richmond	15.9	16.9	5.0	10.7
Roanoke	17.2	18.2	5.0	12.0
Charles'n, W.Va.	15.7	16.7	4.0	11.5
Keyser	16.3	17.3	4.0	12.1
Parkersburg	14.4	15.4	4.0	10.2
Wheeling	15.6	16.6	4.0	11.4
Charlotte, N. C.	18.5	19.5	6.0	11.0
Hickory	18.8	19.8	6.0	11.6
Mt. Airy	18.7	19.7	6.0	12.5
Raleigh	18.4	19.4	6.0	13.2
Salisbury	18.7	19.7	6.0	12.5
Charleston, S.C.	16.5	17.5	6.0	10.2
Columbia	18.4	19.4	6.0	13.2

A 2-cent per gallon discount off the gasoline tank wagon price is offered to dealers except in Washington, D. C., and in Maryland where discount is 3 cents.

ROCKY MOUNTAIN DISTRICT

Continental Oil Co.

	Gasoline			Kero.
	Tank wagon	Service station	Incl'ds tax	tank wagon
Denver, Colo.	14.0	17.0	4.0	12.5
Pueblo	14.0	17.0	4.0	12.0
Grand Junction	16.0	19.0	4.0	14.5
Casper, Wyo.	15.0	18.0	4.0	10.0
Cheyenne	16.0	19.0	4.0	11.5
Butte, Mont.	17.0	20.0	5.0	16.0
Billings	20.0	23.0	5.0	16.5
Great Falls	20.0	23.0	5.0	16.0
Helena	20.0	23.0	5.0	16.0
Salt Lake, Utah	15.5	18.5	4.0	16.0
Albu'que, N. M.	16.0	20.0	5.0	14.0
Boise, Idaho	18.0	21.0	5.0	15.0
Twin Falls	17.0	....	5.0	18.0

TANK WAGON CHANGES

Continental Oil Co. reduced the gasoline tank wagon and station prices 2 cents in Salt Lake City, Utah, June 1. On the same date a general reduction in these prices was posted throughout Idaho while the tank wagon discount was withdrawn. On June 3 the Denver prices were reduced 1 cent to 14 and 17 cents.

Standard Oil Co. (Kentucky) advanced the gasoline tank wagon and station prices to 17 and 18 cents in Jacksonville, Fla., June 1. On June 4 these prices were reduced to 17 and 18 cents in Tampa, Fla.

Standard Oil Co. of California reduced the gasoline tank wagon and station prices 1 cent in Fresno, Calif.

No change has been made in the Standard Oil Co. of Nebraska tank wagon and station prices as stated in this column June 4. At that time it was stated that the state tax had been increased to 5 cents and the gasoline tank wagon and station prices were increased to equalize this tax. There has been no increase in the state tax.

CRUDE OIL PRICE CHANGES

On June 2 The Texas Company, followed by Humble and other companies on June 3, reduced North Louisiana and Arkansas where they purchase oil on a gravity basis as follows: Below 29 degrees, 25 cents, with 1 cent added for each degree upward to 40 and above at 37 cents. The Texas Company and the Gulf company posted 37 cents for Smackover and the Magnolia and Standard of Louisiana, 25 cents. Calion, Bellevue, Urania and East El Dorado crudes were also cut.

On June 2 The Texas Company, and on June 3 all other purchasers, reduced Gray County, Texas, crude to below 35 gravity, 24 cents, with 1 cent added for each degree upward to 40 and above, at 30 cents, and in Carson and Hutchinson Counties, below 35 degrees, 21 cents, with 1 cent added for each degree up to 40 and above at 27 cents. Winkler, Pecos, Crane, Upton, Crockett, Ector, Howard and Glasscock County crudes were cut to 25 cents; and Lea County, New Mexico, to 25 cents; Mirando to 44 cents, Salt Flat to 37 cents, Darst Creek to 37 cents, Pettus to 50 cents. The Magnolia Petroleum Co. on June 3 also cut Corsicana heavy to 22 cents and Luling to 22 cents. The Continental Oil Co. cut Artesia, N. Mex., crude to 25 cents.

On June 2 The Texas Company reduced Texas Coastal prices. Abolishing Grade A and Grade B classifications, the company posted 25 cents for oil below 25 gravity, 26 cents for 25 gravity with 1 cent added for each degree up to and including 40 and above at 60 cents. Other companies followed suit on June 3, only that they stopped at 35 degrees and above at 55 cents. Markham was posted at 37 cents and High Island at 40 cents and the Vacuum Oil Co. put Lockport crude oil in the gravity schedule.

On June 2 the Ohio Oil Co. and the Midwest Refining Co. lowered prices in the Montana, Wyoming and Colorado fields where they purchase. Salt Creek followed the Mid-Continent price cut of June 1, stopping at 36 and above at 33 cents.

On June 3 the South Penn Oil Co. cut all Pennsylvania crudes 25 cents per barrel. The Pure Oil Co. and Tide Water Pipe Co. made similar cuts. Ragland, Ky., crude was cut to 60 cents and Corning, Ohio, to 65 cents. Somerset crude

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CRUDE OIL PRICES

(Continued from Page 117)

Petrolia (Canada) (June 4, 1931)¶	1.50
Oil Springs (Canada) (June 4, 1931)¶	1.62
Alberta (Canada)‡:	
50° and above (Mar. 1, 1931)	2.38
45 to 45.9° (Mar. 1, 1931)	1.87

*Posted by Pure Oil Co. †Posted by Standard of Indiana for boat shipment. ‡Posted by Stoll Refining Co. ¶Posted by Imperial Oil, Ltd. ‖Posted by Imperial Oil, Ltd. and Regal Oil & Refining Co. of Calgary. Somerset, Ky., crude purchased by Ashland Refining Co., Ashland, Ky., and delivered through Cumberland Pipe Line.

EASTERN STATES

Joseph Seep Purchasing Agency

(Effective June 3, 1931)

Penna. Grade Oil in National Transit Lines (Pennsylvania)	$1.50
Pennsylvania Grade Oil in Southwest Pennsylvania Lines	1.35
Penna. Grade Oil in Eureka Pipe Line Lines (West Virginia)	1.35
Penna. Grade Oil in Buckeye Pipe Line Lines (Ohio)	1.00
Corning Grade Oil in Buckeye Pipe Line Co.'s Line	.65
Ragland Grade Oil in Cumberland Pipe Lines (Kentucky) (Jan. 10, 1931).	.60
Wayne District Oil in Cumberland Pipe Lines (April 23, 1931)	1.17

Tide Water Pipe Co.

Bradford district (June 3, 1931)	$1.75
Allegany district (June 3, 1931)	1.75

Pure Oil Co.

Cabin Creek, W. Va. (June 3, 1931)	$1.25
Kelly Creek, W. Va. (June 3, 1931)	1.25
Bradford Hollow, W. Va. (June 3, 1931)	1.25

MEXICAN CRUDE

Panuco*	$ .46

*F.o.b. ship, based on April transactions and exclusive of taxes and bar dues.

Of Interest to Sales Departments

DENY TRADE-MARK FOR COLORED GASOLINES

NEW YORK, June 8.—The Court of Customs and Patent Appeals, sitting in Washington, has ruled that color, taste and odor, an integral part of a product, may not be registered as a trade-mark, the ruling being made in two cases involving the trade-mark properties of colored gasoline.

Judge Garrett ruled against the General Petroleum Corp. of California, which had applied for registration of violet color as a gasoline trade-mark, which application was rejected by the commissioner of patents. In this ruling, Judge Garrett stated that to be registered a feature must be a mark in the trade-mark sense, and that registration of violet color as a trade-mark by General Petroleum would give that company a monopoly on all violet gasoline, which would be contrary to the definition of a valid trade-mark under common law. Replying to the argument that there is no other way of branding gasoline in bulk, Judge Garrett said the court has no power to make something a trade-mark when it is not in fact a legal mark simply because the product is incapable of having the benefit of an actual mark.

Judge Bland, sitting in the same court, handed down a similar decision in the case of the Sun Oil Co. of Philadelphia, which had sought the registration of blue as a trade-mark for its "Sunoco" motor fuel. Judge Bland declared that registration of this color would give the company a monopoly, and that if some other refiner should produce a gasoline having a blue color due to some essential ingredient, it could not be marketed. "We cannot think manufacturing and commerce should be so hampered by a construction of law," Judge Bland said. "With parity of reasoning it might also be argued that the taste and odor of certain articles might be properly and successfully used to distinguish goods from those of another and that therefore such taste and odor should be regarded as the proper subject matter for a trade-mark."

DECREASE IN NUMBER OF NEW OIL BURNERS

WASHINGTON, D. C., June 6.—New orders for oil burners to the number of 17,581 were received during the first four months of this year compared with 22,531 new orders received in the same period of 1929 and 21,040 in 1930.

In April, these orders numbered 5,517 compared with 6,365 in April, 1929, and 5,776 in April, 1930. Stocks on hand at the end of April, 1931, numbered 10,060 compared with 7,723 on hand at the end of April, 1929, and 8,555 at the end of April, 1930.

Of the total shipments of 16,911 oil burners during the first four months of 1931 15,997 were to destinations in the United States, 186 were to Canada and 728 to foreign countries.

Of the 5,517 new orders in the first four months of 1931, 4,058 were domestic burners of mechanical draft and 595 of natural draft.

SALES OFFICIALS ON TOUR

Headed by Harry J. Kennedy, general sales manager, a group of salesmen of the Continental Oil Co. are now on a six weeks' tour of the company's branch offices. The trip started at the Ponca City, Okla., general offices and is being made in company owned airplanes. Included in the group are O. B. Lloyd and P. J. Ryan, assistant sales managers; Frank Moore, special sales representative, and O. M. Bounds, aviation sales manager.

RICHFIELD SERVICES AIRPLANES IN ARMY AIR CORPS MANEUVERS

NEW YORK, June 5.—The smoothness with which the Army Air Corps maneuvers were carried out in New York and New England last week clearly demonstrated the ability of the oil industry to meet the unusual situation created by a tremendous concentration of airplanes to the extent of providing efficient equipment, supplies and trained personnel for the servicing of a project of this character, according to Fred L. Foster, manager of the aviation department of Richfield Oil Corp. of New York, which handled the fueling of the Army air armada during its stay here.

Under the terms of the company's contract with the War Department, Richfield of New York was required to deliver 231,000 gallons of gasoline and 4,890 gallons of lub oil, both products to comply with Army Air Corps specifications, into United States Army airplanes engaged in the maneuvers.

The contract required the company to supply the gasoline in tank wagons, equipped to pump the fuel into the airplanes, each day's fueling to be accomplished in three hours. The same procedure was required with reference to the delivery of lub oil to the planes.

Shortly after the contract was awarded to Richfield of New York for the servicing of the planes, which were located at five airports on Long Island, the Air Corps furnished the company with blueprints of each field showing the location of the planes for each field, and likewise with a schedule for each day's requirements of both gasoline and the delivery schedule, R. J. Babor, technical director of the New York Richfield company, was placed in charge of assembling necessary personnel and equipment for handling the work.

A careful study was made of different types of equipment to be used in the servicing contract. Rather than improvise makeshift equipment to meet the requirements of the contract, company officials decided to use fuel oil trucks equipped with power takeoff pumps, bypasses and pressure relief valves on each pump. Approximately 50 trucks having a capacity of from 1,000 to 2,000 gallons each were assembled, the tanks and fittings carefully inspected and thoroughly steam cleaned, after which they were flushed with motor gasoline. The final cleaning was accomplished by taking a truckload of Army specification aviation fuel and passing it through each truck, after which the Ethyl Gasoline was pumped into the trucks.

Equipping Trucks

Since all of the trucks in the fleet assembled for the Air Corps servicing job were equipped with power takeoff pumps capable of delivering approximately 50 gallons per minute into the tanks of the planes, the company decided to reset all relief valves at 6 pounds pressure to deliver not to exceed 30 gallons per minute into the tanks so that at no time would the gasoline stream enter the planes' tanks at a velocity sufficient to weaken the airplane tank. As the gasoline was loaded into each truck it was passed through an 80-mesh screen. Each truck was equipped with 50 feet of 1-inch new metallic gasoline hose, to the end of which was attached an especially designed flexible hose nozzle. This nozzle was equipped with a 100-mesh screen and these screens were inspected and changed periodically during the maneuvers to eliminate any possibility of dirt reaching the tanks of the plane. To each nozzle was soldered a copper lead wire to which was attached a metal clamp. This clamp permitted the service men to make a contact on the plane so that the ship was grounded through the copper wire to the metallic hose, thence to each truck, which, in turn, was grounded with a chain.

Fire Prevention

Considerable difficulty was encountered by the company in obtaining permission from the fire department of New York City to permit this type of trucking equipment to transport gasoline through the city streets because of the stringent fire regulations. Through the courtesy of the Board of Standards and Appeals, however, these restrictions were waived during the maneuvers, with the understanding that the trucks would move in a body from the Richfield Long Island City plant to the city limits under escort of New York City police. It was required that each truck be equipped with a fire extinguisher and special precautions should be observed to prevent any possibility of accident to the trucks while they were passing through the city streets.

It was likewise required that the truck fleet should move out of the company's Long Island City plant not later than 9 a.m. each day over a definite route established by the fire department, under police escort. As a result of these arrangements, no trouble was experienced in moving the trucks through the city to the various flying fields on Long Island.

Realizing that all traffic lanes to the various airports on Long Island would be heavily congested with traffic during the air show, company officials appeared before the Nassau County police commissioner and outlined the fueling program and the company's desire to use every possible precaution to avoid accidents on

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Richfield tank trucks moving under police escort from bulk station to Long Island flying field.

SUBSTANTIAL DECLINE IN CANADIAN IMPORTS

CHATHAM, Ontario, June 5.—Official figures show for April, 1931, a considerable decline in Canada's imports of crude petroleum and petroleum products from the figures for the same month in 1930. The aggregate for April, 1931, is $2,595,000. The chief decline is in crude petroleum, which fell off nearly $500,000, though lower prices were partly responsible for this. Natural gasoline showed an increase of over $90,000. The minor items listed show no important variations. The United States was the major source of supply, with considerable also coming from Colombia, Peru and Dutch West Indies. The detailed items for April, 1931, were as follows:

Petroleum, for mining, $2.516; petroleum, .8235 to .775, $69; petroleum, .790 or heavier, $1,051,780; petroleum, .725 to .770, $786; petroleum, .8235 or heavier, $80,790; fuel oil, $11,042; illuminating oil, $2,116; distillate, $1,739; coal oil, $12,607; natural gasoline, $95,095; gasoline, $791,438; lubricants less than 25 cents, $171,839; lubricants, $307,441; mineral oil, $10,314; axle grease, $22,324; vaseline, $12,998; paraffin wax, $4,591; paraffin candles, $3,455; naphtha, not otherwise prescribed, $12,715.

Offsetting these imports were merely nominal exports aggregating $77,647 for the month, approximately equal to those a year ago. Exports were mostly to the United States, with smaller quantities to Newfoundland and St. Pierre-Miquelon. Detailed items were: Petroleum, $44,061; coal oil, $653; gasoline, $26,234; mineral oil, $4,620; mineral wax, $1,879.

ADOPT REPORT ON LUB BOTTLE REQUIREMENTS

By Charles E. Kern

Washington Bureau, The Oil and Gas Journal

WASHINGTON, D. C., June 6.—The report of the committee on specifications and tolerances on modification of specifications and tolerances for lubricating oil bottles was adopted by the weights and measures conference without change.

The amended code eliminates the former height limitation for bottles and the requirement for a vent, these amendments being a liberalization of the requirements formerly adopted by the conference.

Of particular importance is the new definition, by the terms of which all bottles, whether or not they are marketed as sealed are included within the purview of the code. The only extended debate prior to the adoption of the committee report centered around the "definition"; some of the old distributors wanted the sealed package exempted from the code requirements but the weights and measures officials would not concede this; arguing that these bottles might very reasonably be used as measures at filling stations even though this might be contrary to the wishes of the distributors, and that accordingly all bottles should conform to the requirements for bottles intended to be regularly used as measures.

HOLD ANNUAL OUTING

NEW YORK, June 6.—The Oil Trades Association of New York will hold its annual outing at Briarcliff, N. Y., on June 16. The outing will be featured by golf, tennis, swimming, and other field sports, with suitable prizes for each event.

The high-light of the day will be a baseball game between the "Petroleum Terrors," representing the petroleum trade element in the association, and the "Awful Vegetoils," representing the vegetable oil division in the organization.

P. C. Meon of Borne, Scrymser Co., is in charge of arrangements for the outing.

Developments in Oil Securities

Dividend Payments of Standard Group for Second Quarter Will Show Decrease. Standard Oil Export Corp. Dividend

Cash dividend payments of the Standard Oil group of companies for the second quarter of 1931 will total $57,543,667, against payments of $63,101,997 in the first quarter, a decrease of $5,558,330, according to Carl H. Pforsheimer & Co. In the second quarter last year payments were $68,555,901.

The decrease is due principally to a reduction in the quarterly payment by Vacuum Oil Co. from $1 to 50 cents, and to an omission of dividends on the common stock by Ohio Oil Co. and Prairie Oil & Gas Co. Vacuum will pay approximately $2,813,279 in the second quarter, compared with $5,626,558 in the first quarter. Ohio Oil paid $1,662,013 on its common in the first quarter, while Prairie Oil paid approximately $1,220,716. In addition to Ohio Oil and Prairie Oil, Standard of Kansas omitted its dividend in the second quarter, while reductions in dividends were announced by Indiana Pipe and New York Transit Co.

Texon Oil & Land

Texon Oil & Land Co. has declared the regular quarterly dividend of 25 cents on the common stock, payable June 30 to stock of record June 10.

Standard Oil Export

Standard Oil Export Corp. declared the regular semiannual preferred dividend of $2.50, payable June 30 to stock of record June 9.

Report of Standard Oil Export Corp. for year ended December 31, 1930, shows net income of $4,142,742, after expenses and taxes, equivalent to $5.41 a share (par $100) on 764,885 shares of 5 per cent guaranteed preferred stock. The common stock is owned by Standard Oil Co. of New Jersey and three of its subsidiaries.

Income account for year ended December 31, 1930, follows: Dividends received from Anglo-American Oil Co., Ltd., $4,148,546; other income, $388,699; total income, $4,537,245; operating expenses, $394,503; net income, $4,142,742; dividends, $3,824,420; surplus, $318,322.

Balance sheet of Standard Oil Export Corp., as of December 31, 1930, follows:

Assets—Permanent investment (corporate stock of Anglo-American Oil Co., Ltd.), $77,049,434; cash, $201,765; accounts receivable, $9,835; deferred charges, $5,955; total, $77,266,989.

Liabilities—Preferred stock, $76,488,500; common stock (represented by 100 no-par shares), $100; accounts payable, $19,854; loans payable, $400,000; reserve for annuities, $273,200; surplus (after transfer of $273,200 to reserve for annuities), $85,335; total, $77,266,989.

Ohio Oil

Report of Ohio Oil Co. and subsidiaries for 12 months ended March 31, 1931, shows net income of $8,203,812 after depreciation, depletion, federal taxes, etc., equivalent after 6 per cent preferred dividends, to 71 cents a share on 6,648,052 no-par shares of common stock.

Consolidated income account of Ohio Oil Co. and subsidiaries for 12 months ended March 31, 1931, follows: Operating revenue, $64,195,866; operating expenses, $45,692,686; balance, $18,503,180; other income (loss, $504,031; balance, $17,999,149); ordinary taxes, $2,029,363; depreciation and depletion, $7,000,127; federal taxes, $765,847; net income, $8,203,812; preferred dividends, $3,450,654; common dividends, $9,695,465; deficit, $4,942,307.

Surplus account follows: Surplus March 31, 1930, $45,564,901; add—credit adjustment for prior years, $583,779; total surplus, $46,148,680; net income 12 months ended March 31, 1931, $8,203,812; total surplus, $54,352,492; deduct—preferred dividends, $3,450,654; common dividends, $9,695,564; surplus March 31, 1931, $41,206,373.

United Carbon

Consolidated income account of United Carbon Co. and subsidiaries for quarter ended March 31, 1931, follows: Operating profit, $184,732; other income, $45,143; total income, $229,875; depreciation and depletion, $207,618; profit before federal taxes, $22,257.

Consolidated surplus account follows: Balance January 1, 1931, $1,551,406; add—profit before federal taxes for quarter ended March 31, 1931, $22,257; total, $1,573,663; deduct—sundry adjustments (net), $5,622; surplus March 31, 1931, $1,568,041.

Standard Oil of Kentucky

Standard Oil Co. of Kentucky declared the regular quarterly dividend of 40 cents, payable June 30 to stock of record June 15.

Derby Oil

Derby Oil Co. and its subsidiary, Industrial Petroleum Co. (controlled by Derby Oil & Refining Corp.), report for quarter ended March 31, 1931, net profit of $1,808 after charges, depreciation, depletion and inventory adjustments. This compares with net loss of $38,968 in first quarter of 1930.

South Penn Oil

South Penn Oil Co. declared the regular quarterly dividend of 25 cents, payable June 30 to stock of record June 15.

Prairie Pipe Line

A refund of $405,449 and a credit of $1,786,025 to the Prairie Pipe Line Co. of Independence, Kans., for overassessment of income and profit taxes was announced today by the Internal Revenue Board. Of the overassessment, $1,317,256 was caused by an increase in the invested capital by inclusion therein of the value of certain tangible and intangible property acquired in excess of the par value of the stock issued therefor.

The overassessments extended over a period from 1915 to 1927. In 1918 an overassessment of $627,856 was caused by a redetermination of the profits tax liability, while the allowance of additional deductions for depreciation caused overassessments of $259,150. An overassessment of $77,067 for 1917 was caused by the determination of the war profits credit on basis of prewar net income and invested capital, while the balance of the overassessment resulted from the correction of accounting errors.

Law Succeeds Brush on Barnsdall

Matthew C. Brush, prominent in industrial and financial circles, has resigned as chairman and director of the Barnsdall Corp. Robert Law, founder of the corporation and active in its management for many years, has been elected chairman of the board, succeeding Mr. Brush. D. L. Frawley, of Pittsburgh, Pa., and J. T. Furlong, of New York, were added to the Barnsdall board, succeeding Mr. Brush and E. W. Stetson, who also resigned. Mr. Frawley has been in charge of the corporation's Federal tax problems, and will represent Pennsylvania interests on the board. Mr. Furlong was associated with the late T. N. Barnsdall.

New Socony Vice Presidents

Arthur F. Corwin, secretary of the Standard Oil Co. of New York, was elected vice president of the company at the annual meeting. Henry Fisher was elected secretary to succeed Mr. Corwin. Frederick Ewing, a director of the company, was also elected vice president of Socony. He is a brother of William Ewing, a partner in J. P. Morgan & Co., and is also a director of the Petroleum Heat & Power Co. Other officers were re-elected and all retiring directors were re-elected.

Humble Oil

Humble Oil & Refining Co. declared the regular quarterly dividend of 50 cents, payable July 1 to stock of record June 1.

Burmah Oil

Report of Burmah Oil Co., Ltd., for year ended December 31, 1930, shows profit of £2,736,013 after income taxes, interest, depreciation and other charges, but before general reserves, etc., the same as shown in preliminary report. This is equal after deducting £249,375 dividends paid on the preference shares, to 36.20 per cent on £6,868,256 ordinary stock, par £1. For year ended December 31, 1929, profit before general reserves amounted to £3,437,472 equal after deducting of £260,937 preference dividends, to 46.25 per cent on ordinary shares.

Anglo-Persian Oil

Preliminary report of Anglo-Persian Oil Co., Ltd., for year ended December 31, 1930, shows profit of £4,648,579 after depreciation, interest and income taxes, but before extra depreciation, discount on debentures and reserves, comparing with £5,206,761 in 1929. The company declared a final dividend of 10 per cent on the common stock, less tax, making 15 per cent for the year, compared with 20 per cent in previous year.

Columbia Gas & Electric

Columbia Gas & Electric Corp. has declared the regular quarterly dividends of 50 cents on the common, $1.50 on the 6 per cent preferred, and $1.25 on the 5 per cent preferred stocks, all payable August 15 to stock of record July 20.

Pierce Petroleum

Pierce Petroleum Corp., for quarter ended March 31, 1931, reports net income of $145,424 after expenses, franchise tax, etc., equal to 6 cents a share on 2,500,000 no-par shares of capital stock. In addition to this net income the corporation received $1,299 tax refund from New York State which was credited to surplus account.

Total income of Pierce Oil Corp. from

(Continued on Page 125)

STANDARD OIL STOCKS ON NEW YORK CURB

Quotations Compiled by Francis, Bro. & Co., Associate Members of New York Curb, Kennedy Building, Tulsa, Okla.

(Complete record week ending May 30)

1931 High	1931 Low	Week ended May 30 Sales	Week ended May 30 High	Week ended May 30 Low	Close June 3	Stocks—	Outstanding capital	Par value	Div. rate	Last paid	1928 High	1928 Low	1929 High	1929 Low	1930 High	1930 Low
1	⅛	No sales.	..	..	..	Atlantic Lobos	499,448	N.P.	....	5-28-30	..	..	..	..	1	⅛
12⅞	6¼	No sales.	..	..	7	Borne Scrymser	$1,000,000	$25	....	10-15-30	56½	44½	46½	25	25	11¼
51	40	100	44⅞	44⅞	42⅞	Buckeye Pipe Line	$10,000,000	$50	$1Q	3-14-31	76	53	74½	55	69	39⅞
129½	101	100	110	110	101	Chesebrough Mfg.	$3,000,000	$25	$1Q‡	3-31-31	161	117	210	130	184⅞	104½
3½	2	5,100	2⅛	2⅛	2⅛	Creole Petroleum	(sh) 5,977,873	N.P.	....	.....	17½	9½	11⅝	5⅝	7⅝	3
30	20⅝	50	22¼	22¼	21⅜	Cumberland Pipe Line	$1,500,000	$50	50cQ	3-16-31	114	67	75⅜	40	65¾	20¼
31	24	No sales.	..	..	24	Eureka Pipe Line	$5,000,000	$100	$1Q	5- 1-31	88	64⅛	70½	42	54¾	26
2⅞	1⅛	500	1⅛	1⅛	..	Galena Signal Oil	$16,000,000	$100	....	.....	13	4¼	6½	3	7	2½
72	49⅞	7,000	52½	51⅝	53	Humble Oil & Refining	$74,103,300	$25	50cQ	4- 1-31	114¾	59½	128	74⅛	119	57¼
18¼	9⅞	18,700	10⅞	9⅞	10⅛	Imperial Oil of Canada	(sh) 25,421,768	N.P.	12½cQ	6- 1-31	104	56¾	41	22	30	15
21⅛	10¾	400	11⅞	10¾	..	Indiana Pipe Line	$3,000,000	$10	25cQ	5-16-31	91⅞	74⅜	41⅞	26	41	14½
15½	8¾	47,100	10⅝	9¾	9⅛	International Petroleum	(sh) 14,247,088	N.P.	25cQ	3-16-31	55	35	30⅜	15	24	11⅜
17½	11⅞	300	12½	11⅞	..	National Transit	$6,362,500	$12.50	25cQ§	4-16-31	32⅜	19⅜	25½	10⅛	22⅜	11½
14½	7⅞	200	8¼	8	7⅞	New York Transit	$1,000,000	$10	25cQ	4-15-31	75	38½	17½	10	21⅜	10¼
30	28	50	29¼	29¼	..	Northern Pipe Line	$2,000,000	$50	$2SA	1- 2-31	69	56½	63	41	54	26⅓
15½	8	300	10⅛	8½	..	Penn Mex Fuel	$10,000,000	$25	....	12-15-30	84	28	44½	20	32	12
8	3¾	No sales.	..	..	3¼	Solar Refining	$4,000,000	$25	....	12-20-29	..	..	50	29	33	4⅞
17	10	100	11¾	11¾	11⅛	Southern Pipe Line	$1,000,000	$10	50c	6- 1-31	19	15	22½	13	20⅞	8⅜
23⅞	12½	1,000	12⅞	12½	12½	South Penn Oil	$30,000,000	$25	25cQ	3-31-31	71⅞	36¾	60¼	35⅛	45⅞	16⅛
36	33	No sales.	..	..	..	Southwest Pennsylvania Pipe Line	$1,750,000	$50	$1Q	3-16-31	102	70	70	60	64	32
38½	19⅛	42,900	25	21½	22	Standard Oil of Indiana	$348,175,069	$25	50cQ	3-16-31	95⅞	70⅜	63	45	59⅜	30
23⅝	15⅝	3,100	17⅜	16¼	16½	Standard Oil of Kentucky	$25,654,516	$10	40cQ	3-31-31	179¾	122¼	46⅞	29	40½	18⅝
36½	19¼	200	24⅜	23⅜	23½	Standard Oil of Nebraska	$4,649,225	$25	50cQ	3-20-31	54⅞	39⅞	50¼	40	48⅞	34⅝
62½	35	250	42	41	38	Standard Oil of Ohio	$14,000,000	$25	62½cQ	4- 1-31	134	71	129	60	108½	43¼
3½	2⅜	No sales.	..	..	..	Swan-Finch Co.	$861,466	$25	....	1-15-29	23¼	16	18	10	10	4
69¾	22⅛	15,000	33	28	34½	Vacuum Oil Co.	$126,180,350	$25	50cQ	3-20-31	111	72	133¾	75	97⅞	45⅝

*Ex-dividend. †Unit of trading less than 100 shares. ‡Plus 50 cents extra. §Plus 10 cents extra.

INDEPENDENT OILS ON NEW YORK CURB

Quotations Compiled by Francis, Bro. & Co., Associate Members of New York Curb, Kennedy Building, Tulsa, Okla.

(Complete record week ending May 30)

1931 High	1931 Low	Week ended May 30 Sales	Week ended May 30 High	Week ended May 30 Low	Close June 3	Stocks—		Outstanding capital	Par value	Div. rate	Last paid	1928 High	1928 Low	1929 High	1929 Low	1930 High	1930 Low
1¾	⅝	5,900	¾	⅝	⅝	American Maracaibo	(sh)	700,000	N.P.	....	.....	9½	3⅛	8⅝	1⅛	4½	½
16⅞	8½	100	9¼	9¼	..	British American Oil Corp. (new) coup.		1,311,321	N.P.	20cQ	4- 1-31	55	32¾	62	7⅞	23	13⅜
2⅜	½	900	1	⅞	¾	Carib Syndicate		$131,250	25c	....	.....	4½	3⅞	4⅞	1	2¾	⅝
20¾	9¾	224,400	12⅛	10¼	10¼	Cities Service	(sh)	24,290,359	N.P.	30cA‡	6- 1-31	90⅞	54	68⅛	20	44¼	13
84⅜	61¼	5,100	71	62¾	61⅜	Cities Service pfd.	(sh)	1,500,000	N.P.	50cM	6- 1-31	103¼	94½	98¾	84	93⅞	78¼
½	⅛	9,300	1/16	⅛	⅛	Colombia Syndicate		$2,000,000	$1	....	.....	3¼	.76	2	½	¾	⅛
2¾	1½	No sales.	..	..	..	Consolidated Royal		$5,527,875	$10	7½cQ	4-25-31	8⅞	6¼	11⅛	2½	5⅞	2
⅝	¼	600	⅜	¼	..	Crown Central		.....	....	....	.....	..	..	..	..	..	..
5	3½	No sales.	..	..	..	Darby Petroleum		1,019,392	N.P.	....	10-15-30	33½	3¼	26	6½	21¾	4¼
6	2½	2,100	2⅞	2½	..	Derby Oil & Refining	(sh)	500,000	N.P.	....	.....	2¼	1	11	2	11	2
40⅛	26	No sales.	..	..	..	Derby Oil & Refining pfd.		48,500	N.P.	....	.....	21⅛	7½	44	20¾	60	30
75½	38	3,300	46½	41⅜	44	Gulf Oil Corp.	(sh)	4,504,921	$25	37½cQ	4- 1-31	165	101⅛	209	115	166⅞	58½
⅝	¼	7,700	1/16	¼	1/16	Intercontinental Petroleum		$5,682,000	$5	....	.....	3⅜	1	2⅞	⅜	1⅜	⅜
1⅞	½	300	⅝	⅝	..	Kirby Petroleum	(sh)	750,000	N.P.	....	.....	3	1¼	3⅝	1¼	3	⅞
1½	½	16,900	¾	½	½	Leonard Oil & Development		$50,000,000	$25	....	.....	9⅜	5⅛	6⅛	1	4¾	½
6¾	3½	400	4⅛	3½	..	Lion Oil & Refining	(sh)	250,000	N.P.	....	10-27-30	43⅞	20	38⅞	18	29	4⅞
25	14⅛	3,600	16½	15¼	15	Lone Star Gas	(sh)	5,000,000	N.P.	22cQ	3-31-31	69¼	48½	67⅞	28	55⅞	19⅝
½	⅜	5,100	1/16	¼	¼	Magdalena Syndicate	(sh)	850,000	$1	....	.....	1⅞	½	1¼	½	½	⅛
5	3	100	4⅞	4⅞	4	Maggay Oil Corp.		160,000	N.P.	....	7-10-30	48½	32	38½	14	16	3
4⅞	1½	200	3½	2⅝	..	Mexico-Ohio Oil Co.		500,000	N.P.	....	.....	8	2¾	6⅜	2¼	7½	1¾
½	¼	100	¼	¼	..	Mountain & Gulf		$4,000,000	$1	1cQ	4-15-31	1¾	.76	1½	¼	¾	⅜
5⅞	3½	2,600	3⅞	3⅜	3½	Mountain Producers		$1,682,182	$10	25cQ	4- 1-31	28⅞	19½	22⅞	7	12⅛	3¾
1½	1	600	1	1	..	New Bradford Oil		$1,095,291	$5	7cQ	4-15-31	5⅝	4¼	5	2½	3½	1⅛
3	1⅜	1,500	1½	1⅜	1⅜	New Mexico and Arizona		$1,000,000	$1	....	.....	11⅞	7⅛	9⅜	2¼	7¼	1½
3¼	1⅛	1,000	1¼	1⅛	..	North Central Texas	(sh)	400,000	N.P.	....	9- 2-30	14¼	8½	18½	6⅛	11¼	2⅛
½	¼	10,100	⅜	¼	¼	Pandem	(sh)	489,875	N.P.	....	.....	6	2⅛	3½	½	2½	¼
2	⅝	300	⅝	⅝	¾	Pantapec Oil	(sh)	1,506,000	N.P.	....	.....	15⅝	8½	10½	1⅞	4⅜	⅞
1½	⅝	3,000	⅞	⅝	..	Reiter-Foster	(sh)	388,584	N.P.	....	12- 2-29	12⅞	4⅛	8½	1⅛	5⅜	1
3	1¾	100	1¾	1¾	..	Ryan Consolidated	(sh)	500,000	N.P.	....	.....	12	4⅛	11	3	8⅝	2
1⅜	⅞	No sales.	..	..	..	Salt Creek Consolidated	(sh)	1,286,300	$10	7cQ	4- 1-31	7¼	5½	5⅞	1⅞	2½	½
7¾	4	3,000	5	4⅛	4⅞	Salt Creek Producers	(sh)	1,496,859	$10	35cQ	5- 1-31	35	23⅛	25⅞	9	15¼	5¼
5¼	1½	1,900	1⅞	1¾	1⅝	Sunray Oil Corp.	(sh)	1,163,185	$5	5%Q§	4-15-31	..	..	12	5⅝	10	2
1⅞	⅝	1,100	¾	⅝	⅞	Venezuelan Petroleum	(sh)	755,090	$5	....	2-15-30	9¼	4¾	6½	1¾	4½	⅜
3½	1½	No sales.	..	..	..	Woodley Petroleum		$500,000	$1	....	3-31-29	8¼	4⅞	9½	2	5	½
1¼	¼	2,100	1¼	½	..	Y Oil & Gas		100,000	N.P.	....	.....	8¾	2¼	2⅞	½	2½	⅜

*Ex-dividend. †Unit of trading less than 100 shares. ‡Payable monthly and monthly stock dividend of one-half per cent. §Paid in lieu of regular cash dividend of 2 per cent.

TRANSACTIONS IN OIL SHARES ON NEW YORK STOCK EXCHANGE

Quotations Compiled by Francis, Bro. & Co., Members of the New York Stock Exchange and Associate Members of New York Curb, Kennedy Building, Tulsa, Okla.

(Complete record week ending May 30)

1931 High	1931 Low	Week ended May 30 Sales	Week ended May 30 High	Week ended May 30 Low	Close June 3	Stocks—		Outstanding capital	Par value	Div. rate	Last paid	1928 High	1928 Low	1929 High	1929 Low	1930 High	1930 Low
23	15½	4,100	17	16½	16	Amerada Corp.	(sh)	922,075	N.P.	50cQ	4-30-31	43⅞	27⅛	42⅝	17½	31½	16½
12⅜	5	200	6	6	..	American Republics Corp.	(sh)	209,180	N.P.	$3.50SA	12-10-30	85	51⅛	64⅜	12½	37	5⅛
31	20	20	20	20	..	Associated Oil		$57,260,300	$25	50cQ	3-31-31	53⅜	37½	47¼	34½	51	30
23⅝	11⅛	9,000	14⅛	12⅝	13	Atlantic Refining		$66,763,775	$25	25cQ	3-16-31	66⅜	50	77⅞	30	51⅜	16⅝
14½	5¾	8,900	7	6¼	·6⅛	Barnsdall Corp. A		$56,546,600	$25	25cQ	5-11-31	54	20	49⅛	20	34	8⅝
12	5	31,900	6¾	6	6	Continental Oil of Delaware	(sh)	4,741,554	N.P.	....	.....	..	..	47⅞	18	30½	7¾
47	15¼	2,700	19¾	19	17	General Asphalt	(sh)	413,333	N.P.	75cQ	3-16-31	94⅞	68	94¾	42¼	71½	22⅜
68½	27	6,000	34⅝	28½	30	Houston Oil		$24,968,600	$100	....	.....	167	79	109	26	116⅞	29¼
4⅝	2	1,200	2⅛	2⅛	2⅛	Indian Refining		$12,564,070	$10	....	.....	39⅝	9	53	13⅛	17	2
4½	2	800	2½	2¼	2⅛	Louisiana Oil Refining	(sh)	1,190,063	N.P.	....	.....	19¾	9⅜	18	7	12	3½
3¾	1	400	1½	1¼	..	Maracaibo Oil	(sh)	330,000	N.P.	....	.....	25½	12½	18½	5⅛	10⅜	1⅜
20¾	10⅝	40,500	14½	11⅛	12⅝	Mexican Seaboard	(sh)	1,244,383	N.P.	....	10- 1-24	72	45⅜	59⅜	8¼	37	9¾
16⅜	5¾	4,200	8	7	6½	Mid-Continent Petroleum	(sh)	1,857,912	N.P.	....	.....	44½	25⅛	39⅞	22⅛	32	11
19½	7	17,600	8⅛	7½	7¾	Ohio Oil	(sh)	6,648,052	N.P.	....	.....	84	58½	79⅞	64¼	32	16
35⅛	25	100	25	25	25	Pan American P. & T.		$50,084,700	$50	....	12-20-27	50⅞	38¼	69	40½	46½	42
36½	25	500	25	25	25	Pan American P. & T. "B"		$121,110,650	$50	....	12-20-27	59⅞	37¾	69¼	40½	67¼	30
4¼	1½	200	1¾	1⅝	..	Panhandle P. & R.	(sh)	199,370	N.P.	....	.....	21¾	11½	15¼	3	12¾	1¾
20	10	70	10¼	10¼	..	Panhandle P. & R. pfd.		$2,564,400	$100	....	.....	108	70	76	47½	20	47½
16⅝	4¾	20,700	6¼	5½	5½	Phillips Petroleum	(sh)	2,593,075	N.P.	....	1- 2-31	53⅞	35¼	47	24¼	44⅜	11½
1½	½	3,000	⅝	½	½	Pierce Oil Corp.		$29,622,831	$25	....	.....	5¼	½	3⅜	1	2½	½
3⅜	1	5,500	1⅝	1½	1¼	Pierce Petroleum	(sh)	2,500,000	N.P.	10c	2-16-31	7	3½	5⅞	½	7⅛	1⅝
20⅜	6½	10,900	9½	8¼	7⅞	Prairie Oil & Gas		$60,848,000	$25	....	.....	68	46	65⅜	40½	54	11¼
26½	14⅝	4,400	20¼	18⅛	16¾	Prairie Pipe Line		$101,250,000	$25	75cQ	3-31-31	280	172	65	45	60	16⅝
6	1⅞	800	2¾	2½	2	Producers & Refiners		$37,438,950	$50	....	9-15-23	29⅞	16	25⅞	4	11⅞	1
16	6½	190	6½	6½	..	Producers & Refiners pfd.		$2,845,350	$50	....	5- 4-25	49⅝	41	46¾	25½	40	11½
11⅞	5½	5,900	6	5⅞	5¾	Pure Oil		$75,959,250	$25	....	9- 1-30	31⅝	19	30¾	20	27¼	7⅝
6⅜	1	3,300	1½	1⅛	1	Richfield Oil (new)		$52,410,875	N.P.	....	.....	56	23	49⅝	20	9⅜	4⅛
10¼	3⅛	6,500	4½	4	3¼	Rio Grande Oil	(sh)	1,236,270	N.P.	....	7-25-30	37½	32	42½	15	25¾	5
42⅝	24⅞	9,700	28⅝	27⅛	26⅝	Royal Dutch, N. Y.	(sh)	611,303	....	$1.3404	1-30-31	64	44⅝	64	43⅛	56½	36⅞
34	25⅞	No sales.	..	..	..	Shell Transport & Trading Co.		£23,985,000	£1	$0.966	1-23-31	47⅞	41⅜	51½	40⅝	48⅜	26
10¼	4½	8,100	5⅛	4¾	4¾	Shell Union Oil	(sh)	13,066,497	N.P.	....	6-30-30	39¼	23¼	31⅜	19	25½	5¼
11	5¼	3,800	6	5½	5¼	Simms Petroleum		$8,353,620	$10	....	9-15-30	27½	18⅛	40⅛	15	37	5⅝
15⅞	6¼	36,100	8½	7⅝	6⅞	Sinclair Consolidated	(sh)	5,500,000	N.P.	25cQ	4-15-31	46¾	17⅜	45	21	32	9¾
103	77½	300	83¾	82½	77½	Sinclair Consolidated pfd		$16,025,250	$100	$2Q	5-16-31	110	102½	111	103	112¼	86
12⅞	3⅛	1,500	4¼	4⅛	3⅛	Skelly Oil		$27,441,250	$25	....	12-15-30	42⅝	25	40½	28	42	10⅛
51¾	31⅛	20,100	35½	33⅜	33	Standard of California	(sh)	12,594,098	N.P.	62½cQ	3-16-31	80	63	81⅞	51½	75	42½
19	8¾	1,400	9⅜	9	8¾	Standard of Kansas		$8,000,000	$25	....	3-16-31	37¾	15	33¾	18	49	14⅜
52½	30⅝	76,800	34⅝	33	33⅛	Standard Oil of New Jersey		$634,999,200	$25	25cQ‡	3-16-31	59⅜	37¾	83	49	84⅞	32½
26	13⅞	38,100	17½	15½	14¾	Standard Oil of New York		$445,223,675	$25	40cQ	3-16-31	33¼	28¾	48⅛	31¾	40⅜	19⅜
45¼	32	300	33⅞	32	..	Sun Oil	(sh)	1,416,869	N.P.	25cQ	3-16-31	77	31½	68⅜	55	70	39
1¾	¾	1,700	⅞	¾	⅞	Superior Oil Corp.	(sh)	776,979	N.P.	....	12-20-30	..	..	24	5¼	9⅜	¾
36¼	18	35,900	20⅝	19⅝	19½	The Texas Corporation		$246,204,900	$25	50cQ	4- 1-31	74¾	50	71⅞	50	60½	28¼
6½	2½	2,500	3¾	3⅛	3	Texas Pacific Coal & Oil Co.		$9,304,890	$10	....	12-31-29	26⅝	12¼	23⅞	9½	14½	4
18	10½	No sales.	..	..	..	Tide Water Oil	(sh)	2,191,759	N.P.	20cQ	3-31-31	41½	19⅝	40	14	31	13
83	67	No sales.	..	..	..	Tide Water Oil pfd.	(sh)	19,947,000	N.P.	$1.25Q	5-16-31	100⅛	86	97½	85⅛	94⅞	71
9	4	5,200	4¾	4⅜	4⅜	Tide Water Associated	(sh)	5,560,424	N.P.	30cSA	2-16-31	25	14¾	23½	10	17¾	5⅞
68	38	600	41½	40	39⅜	Tide Water Associated pfd.		$73,284,500	....	$1.50Q	4- 1-31	..	..	90⅞	74⅛	89¾	55
26⅝	14	6,100	17⅛	16¼	16⅞	Union Oil of California		$104,342,375	$25	50cQ	5- 9-31	58	42⅜	57	42⅛	50	10⅛
25¼	20	800	20⅛	20	20½	Union Tank Car	(sh)	1,254,048	$100	40cQ	6- 1-31	128¼	110	163¾	121⅞	38½	23
7⅜	3⅝	No sales.	..	..	..	Warner-Quinlan	(sh)	632,948	N.P.	....	7- 1-30	44⅞	26	42⅞	15	27	4¼
9¾	3½	900	5¼	4¼	4½	Wilcox Oil & Gas	(sh)	428,907	N.P.	....	5-10-28	..	..	29¾	12⅞	21	6½

*Ex-dividend. †Unit of trading less than 100 shares. ‡Plus extra dividend of 25 cents.

In comparing highs and lows for the several years in the three tables, it will be necessary to take into consideration cases where there have been stock split-ups.

BUNKER C AND DIESEL REACH NEW LOWS

(Continued from Page 110)

previous week and a daily average of 209,250 bbls. for the four weeks ended May 30. Details follow:

	Bbls. of 42 gals.
At Atlantic Coast ports—	
Baltimore	195,000
Boston	103,000
New York	878,000
Philadelphia	308,000
Others	182,000
Total	1,666,000
At Gulf Coast ports—	
New Orleans and Baton Rouge	62,000
Total	62,000
Daily average	8,857
At Atlantic and Gulf Coast ports—	
Total	1,728,000
Daily average	246,857
Daily average four weeks	209,250

Distribution of total imports is as follows:

Crude	1,146,000
Gasoline	300,000
Fuel oil	282,000

Petroleum Exports

There was a moderate recovery in export movement of refined petroleum products from the local port during the week ended May 30, with slight increases in volume recorded on a number of products.

The following table shows principal exports of refined products from New York for the past three weeks (all figures in gallons unless otherwise noted):

	Week ended		
	May 30	May 23	May 16
Gasoline	115,000	190,000	195,000
Naphtha	815,000	235,000	375,000
Kerosene	48,000	12,000	33,000
Fuel oil	130,000	25,000	18,000
Lubricating oil	1,170,000	1,225,000	3,175,000
Petroleum, ref.	800,000	490,000	395,000
	Pounds		
Petrolatum		55,000	7,000
Paraffin wax	1,160,000	1,380,000	1,630,000
Refined	325,000	185,000	45,000
Scale	220,000	975,000	1,050,000
Lubricating grease	530,000	600,000	1,050,000

Further reduction in crude oil quotations have tended to weaken sentiment among export buyers, and new business was of limited volume. Interest in later deliveries was also lacking.

Charter Market

Continued quiet featured the tanker market for coastwise and intercoastal movement, although there was more interest manifest in the Gulf and South American market. A number of fixtures of dirty tankers for movement of East Texas crude from Gulf ports to France and England are looked for over the next few months, and it is expected that the movement of gasoline out of the Gulf will likewise record some improvement shortly.

Fixtures reported during the past week were as follows:

Motorship Nyholt (Nor.), 8,200 gross, three to five months, Gulf/Canada trade, 4/6, June.

Steamer Athelbeach (Br.), 3,799 net, crude, Gulf to French Mediterranean, two trips, 9/-, June.

Steamer Hilda Knudsen (Nor.), 5,482 net, crude, Tampico to the continent, 8/6, June.

Steamer Aase Maersk (Dan.), 3,636 net, crude, Gulf to Bordeaux, 9s, June loading.

Motorship Athelcrown (Br.), 7,070 net, fuel oil, Trinidad to Buenos Aires, 10s, June loading.

Motorship A. O. Knudsen (Nor.), 5,191 net, fuel oil, Gulf to Buenos Aires, 11s 6d, July loading.

Motorship Svealborg (Sw.), 2,719 net, clean, Black Sea to Vladivostok, 16s 9d, June loading.

TRUCKS UNDER COMMISSION

AUSTIN, Tex., June 8.—Contract truck haulers such as those handling oil field machinery and pipe were brought under control of the State Railroad Commission when Governor Ross S. Sterling June 6 approved the truck and bus license bill, H.335. The bill was declared effective at once.

FACTORS IN OPERATION OF GASOLINE PLANTS

(Continued from Page 22)

the standpoint of good lubrication. The temperature of compression is not sufficient to vaporize much of the water and thus utilize its latent head and also prevent emulsification of the water and lubricating oil.

Another disadvantage lies in the fact that water vapor injected into gas going to a plant for treatment will give rise to difficulties in the process of extraction.

Two limiting conditions may be imagined in compressing gases:

1. No heat is removed from the gas during the process in which the compression is "adiabatic," with a rise in temperature of the gas.

2. All the heat generated during compression is removed, in which case the compression is "isothermal."

In this case the intermediate pressure was about 20 pounds per square inch gauge. The losses due to two-staging are caused mainly by loss in pressure through the low stage discharge valves, intercooler and high stage intake valves. This loss has more than offset the saving accomplished by intercooling in this particular case.

The overall ratio of compression in this case was 7.7. There are certain mechanical advantages that frequently offset any net loss that might be involved in two-staging. The low stage cylinder can be built relatively large to handle a large volume of gas and at the same time its construction does not have to be so heavy as to stand the discharge pressure. The high stage cylinder can handle this same volume and be relatively small and of heavier construction.

In the case of the air compressor mentioned, if the compression had been adiabatic, the final temperature of the air would have been 507° F. The formula for calculating this is:

$$T_2 = T_1 \frac{P_2}{P_1}^{\frac{r-1}{r}} \text{ where}$$

T=temperature in °F. absolute.

P=pressure in pounds per square inch absolute.

r=ratio of specific heats.

1=intake and 2=discharge conditions.

For air r=1.41; for natural gas about 1.265.

In compressing natural gas to 50 pounds per square inch gauge pressure, it would hardly be practical to two-stage unless the intake pressure is a vacuum of 15 inches or greater. Some unusual conditions may alter this statement, of course.

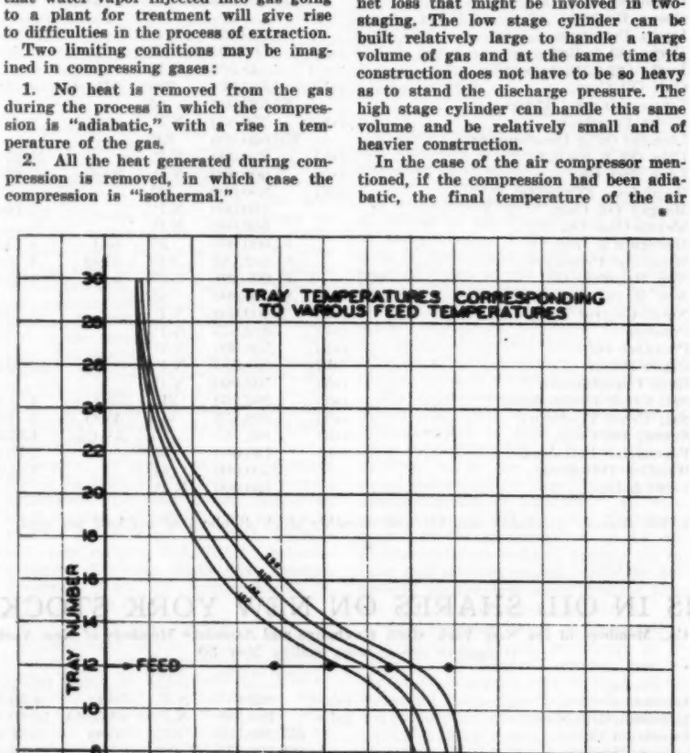


Figure 3—Relative effect of feed temperatures on tower operations with respect to tray temperature.

All actual cases generally fall between these limits.

The principal reasons for the deviation of the real compressor from the ideal are that the cylinder and piston cannot be made of heat-resisting material, that the valves cannot be made to operate perfectly, and the effect of inertia of the gas being handled.

Dual Stage Compressor

Compressing in more than one stage may or may not be advisable, depending on a great many circumstances. The advantage lies in increased efficiency. By compressing to an intermediate pressure, cooling and then compressing to the final pressure some of the advantages of cooling that have been discussed are utilized.

Actual indicator cards taken on an air compressor, two-staging from atmospheric pressure to 100 pounds per square inch gauge, show the following relative losses and gains in per cent of total work.

	%
Saving by low stage jacket cooling	3.53
Saving by high stage jacket cooling	5.88
Saving by intercooling	3.63
Losses due to two-staging	9.02

The accompanying sketch (Figure 1) illustrates the division of these savings and losses determined from actual indicator cards.

Two Important Calculations

The calculations of greatest interest and use of the operator of engine-driven compressors are for volume of gas delivered and horsepower required. Formulae used by Mr. Hegeman for these calculations have been checked very closely in compressing California natural gas.

Volume delivered is

$$PD \times \frac{P_1}{14.7} \times E, \text{ where}$$

PD is piston displacement in millions of cubic feet per day, or

$$\frac{(\text{area}) \times (\text{stroke}) \times (\text{r.p.m.}) \times 60 \times 24}{1{,}728 \times 1{,}000{,}000}$$

P_1 is intake pressure in pounds per square inch absolute.

E is volumetric efficiency, or

$$0.975 - C1(R^{1/n} - 1), \text{ where}$$

C1 is per cent clearance, or clearance volume divided by piston displacement, and is expressed as a decimal.

R is ratio of compression, or ratio of final absolute pressure to initial absolute pressure, and

n = 1.00 for R of 1-3,
n = 1.07 for R of 3-5,
n = 1.15 for R of 5-7.

The formula for millions of cubic feet per day then becomes

$$V = \frac{(\text{area}) \times (\text{stroke}) \times (\text{r.p.m.}) \times 60 \times 24 \times P_1 \times [0.975 - C1(R^{1/n} - 1)]}{1{,}728 \times 1{,}000{,}000 \times 14.7}$$

To calculate horsepower required, the following formulae are used:

Compressor I.H.P. =

$$(1\text{HP}/1{,}000{,}000 \text{ cu. ft.}) \times \frac{P_1}{14.7} \times PD \times E$$

I.H.P. per million cubic feet is calculated from Weymouth's formula:

$$\text{I.H.P.} = \frac{102.2[1.08 + \frac{1}{2R^2}]}{0.96 - 0.02R} \log R$$

The attached curve (Figure 2) is useful in solving this equation. The dotted line indicates approximate variation of the actual from this curve.

Clearance per cent values can generally be obtained from the manufacturer and ordinarily vary from about 3 per cent for the cylinders of large diameter to 18 per cent for smaller high-pressure cylinders.

The power required to compress natural gas is about 0.93 of that required to compress air under the same conditions. This factor is dependent of course upon the exact composition of the gas. To compress very rich gasoline vapors this factor might be reduced to as low as 0.60.

Regulation of Incoming Gas

It is highly desirable during periods of high loads to maintain a constant suction pressure to the compressors. An expensive regulator installation to accomplish this will be paid for in a short time. It will reduce mechanical troubles and increase the plant throughput. Most operators will not maintain a maximum load by hand control. Mechanical regulation will also prevent the cumulative effect of one unit in a plant stopping due to overload. As one unit stops the load naturally builds up on the others unless the volume of incoming gas is immediately cut back.

Entrainment in the gas should be efficiently removed before the gas reaches the compressors. Also, in two-staging, the gas should be thoroughly scrubbed of any condensate. It is quite often more economical to maintain a fairly high temperature of intercooled gas than to replace a defective or overloaded intermediate scrubber, thus preventing the formation of large amounts of condensate. This, of course, is not a desirable feature to incorporate in an original design.

It is desirable to eliminate, as much as possible, air and water vapor from the incoming gas. Oftentimes in depleted fields very high vacuums are pulled. This increases the infiltration of air through leaks in the gathering system. The accompanying curve sheet is often useful in determining the maximum water vapor

content of natural gas in making calculation on field conditions.

The Final Fractionator

The final fractionator, although comparatively new, is probably the simplest unit of processing equipment in the absorption plant. It deals principally with hydrocarbons of known properties. From a study of the operation of the final fractionator much can be learned concerning the operation of the still, fractionator and absorber.

To absorb as much as possible of the desired gasoline from natural gas, until selective absorption is perfected, much of the undesirable portion must be included. Fractional distillation processes are more selective than absorption and so the burden of selectivity is shifted in this direction. Two fractionations are resorted to, one separating the absorbed gasoline from the absorbent, the other separating the lighter fractions from the desired product. The latter is accomplished in the final fractionator.

The one type of final fractionator consists essentially of a column of trays with a means of heating at the bottom and a means of condensing at the top. The gasoline is fed into some intermediate point. As it gravitates to the bottom some of it is boiled off by the hot rising vapors. Each tray acts as a combined condenser and boiler. The hot vapors coming from below strike the relatively cool liquid on the tray, condensing some of the heavier elements in these vapors. The heat given off by this condensation boils off some of the lighter constituents of the liquid on the tray.

With the proper number of trays a very efficient separation is secured and the lighter (undesirable) constituents of the feed are taken off as excess overhead.

Another type of installation has the condensing section at the top of the column and the amount of reflux is controlled by controlling the water rate to the condenser. This type is not as sensitive as the type described above, due to the fact that it will not respond as quickly to changes in conditions as when the reflux rate is controlled directly. Incidentally, it is a good idea to maintain a slightly excessive amount of condensate to allow for fluctuations. This will keep a little liquid going out with the excess overhead. In most cases it will be desirable to heat this liquid and vaporize it to prevent freezing, and to maintain a uniform heat value in cases where this overhead is used for fuel.

In normal operation, a measure of the fractionating effect is secured from the temperature gradient between trays. If the column is operating as desired, a slight temperature difference between the two top trays indicates an efficient fractionation. A large temperature difference indicates poor fractionation. Hence, the more trays the greater the fractionating effect that can be secured or the less the amount of reflux that will be required.

At higher pressures the column will have greater capacity both from the standpoint of quantity and fractionating effect. This is due to the fact that the rising vapors will contain more molecules per cubic foot.

In selecting the pressure at which to operate, the limiting factor is generally the performance of the condensers. To stay within easy range of average cooling tower efficiency as to condenser operation, final fractionator pressures ordinarily run from 175 to 200 pounds per square inch gauge. To operate at substantially lower pressure would lead to extremely low top temperatures with consequent freezing of entrained water. It would also necessitate the use of an expensive refrigeration system of condensing. In addition, there would be the relatively low fractionating efficiency as already explained.

The temperature of the feed should be approximately the temperature of the tray on which the feed is introduced. The accompanying curves (Figure 3) indicate the relative effect of feed temperatures feeding to tray 12; 210° F. is apparently the best feed temperature. However, it is apparent that little effect is secured between trays 2 and 12 and the feed could be entered at a lower point.

An occasional survey with fundamental analyses will serve as an excellent guide to operating conditions. For a rough check on the reflux a boiling test can be conducted in a few minutes at the plant. A 100 cc. graduate is chilled with reflux and then filled to the 100 cc. mark. The reflux is then boiled off at a moderate rate and the temperature at which about 5 cc. are left can be roughly called the "final boiling point." If this is over +10° F. the reflux contains hydrocarbons heavier than isobutane and some of these are going overhead to dry gas.

Absorption Plant

The absorption plant of the natural gasoline industry is similar in many ways to that of the refrigeration industry. The principal differences are in two respects. The cycle is continuous but not closed, as in the case of the ammonia absorption system where both constituents are recycled. This is, of course, to accommodate the difference in objective of the two systems. The refrigeration plant is used to secure the removal of heat, whereas the object of the gasoline plant is the recovery of one of the constituents involved.

The second and most significant difference lies in the fact that the two constituents, the absorbent and the natural gasoline absorbed, are complex mixtures of not as great differences in physical properties as are ammonia and water.

The two industries have benefited much by an exchange of ideas and principles of design. The natural gasoline industry being the younger has probably benefited most.

In building a gasoline plant, the designer nearly always has two very serious problems to confront, namely, the length of life of the plant and fluctuation of volumes and quality of gas. These two items generally outweigh in importance to the designer the fluctuation of the market for the product.

Each plant has special conditions to be met that require special features of design. In almost every case there will be a new condition arise that will require changes in methods of operation or in design. The builder will do well to incorporate such features as will permit of readily making changes. Plants in operation in an active field generally present the appearance of being continually in the process of construction. This usually continues until there are almost no flowing wells left in the system. To secure the greatest return over its short life from a natural gasoline plant, the builder will do well to prepare for unforeseen changes.

A type of plant very suitable in fields of flush production is that in which the enriched oil is subjected to a fractional distillation in two steps. In the first step the oil is conducted in a fractionator at about 30 pounds per square inch pressure. From the bottom of this, the oil is taken to a stripper at about 8 pounds per square inch. The overhead from the stripper is dehydrated, heated and returned to the fractionator. The overhead from the fractionator is the product and the endpoint is controlled at this point. Agitation steam is used only in the stripper.

Another type takes the enriched oil to a flash tank after leaving the preheaters. The vapors from this go to the fractionator. The oil goes directly to the stripper and the condensed overhead is dehydrated, heated and injected into the fractionator. The fractionator bottoms go into the top of the stripper. In other respects this type is similar to the type first described.

In either type it is well to condense and dehydrate that part of the fractionator overhead required for backwash, or endpoint control, before final cooling of the product. This takes quite a load of unnecessary cooling from the final cooling coils.

This makes a very flexible plant for a field of flush production followed by a rapid increase in gasoline content of the wet gas with the decline in volume. The flush period would be accompanied by a comparatively low oil to gas ratio, partly compensated for by efficient obsorbers. The result would be high saturation of the oil. High temperatures and efficient heating accompanied by the low pressure of the stripper would result in efficient fractionation and stripping of the oil.

This requires ample condensing and cooling facilities, and is done to best advantage by circulating a large volume of water, without regard to final cooling, over the hottest fluid streams in the cooling tower. The final cooling is secured with a separate stream of colder water.

As the gas volume drops off the oil to gas ratio will increase, and as the saturation of the enriched oil falls off larger volumes of light constituents are absorbed. This will necessitate the use of ample trays in the fractionator and stripper. It will also more than likely require the use of a larger volume of "agitation," or "reduction," steam in the stripper. Here again, a high rate of water circulation over the hot fluids going to the cooling tower will be desirable in order to condense this increased agitation steam.

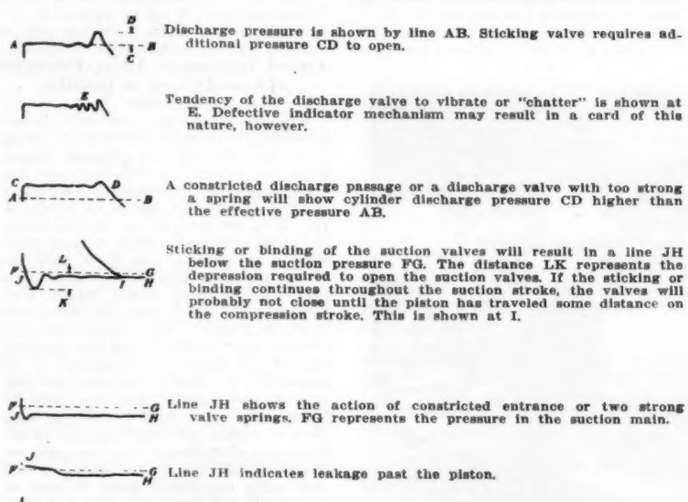
Stripping During Flush Output

The use of the fractionator and low pressure stripper as separate units will have the advantage during the flush production of securing efficient stripping of the absorption oil with low agitation steam rates. This is mainly due to the low pressure and high temperature available in the stripper. The period following the flush production will be one of load on the fractionator together with the requirement of a higher agitation steam rate for stripping. Fractionation is accomplished without the deleterious effects of condensed steam in the fractionator, the lighter constituents being removed without the presence of steam. This is an aid to fractionation that will be particularly needed during this period.

These concepts are based on a very important principle involved in the fractionation of enriched absorption oil. An oil that is highly saturated with gasoline will have, as its absorbed fraction of gasoline, fairly heavy constituents. As the saturation decreases, the oil will absorb lighter constituents that are further removed in physical properties from the absorbent. In the fractional distillation of these lighter constituents, a greater number of trays will be required to make a close separation from the oil. As they vaporize they will carry with them larger amounts of oil vapors than is the case with the removal of heavier fractions that more nearly approach the properties of the absorbent.

This explains the fact that a plant will frequently not perform as expected immediately following the flush period. During the period of flush production the oil to gas ratio is low and the overload is felt mostly in the absorbers. This, the operator can easily understand. But as the oil to gas ratio increases, the overload is shifted from the absorbers to the fractionator. It is hard for the operator to explain the decrease in efficiency of the plant with an increase in oil to gas ratio. This, of course, does not always occur, but there is always a tendency in this direction.

After the flush period of absorber overload and the period following, where fractionator overload occurs, the plant will enter a period of very efficient operation. This is generally the history of every plant. It does not pay to meet the peak demand in the original plant design. To handle efficiently the peak demand would require possibly twice the investment. The peak is of such short duration and so uncertain in nature that the designer would be foolish to consider it. His nearest approach to an exception to this will be in some of the newer high pressure fields and even here curtailment makes him conservative.


Discharge pressure is shown by line AB. Sticking valve requires additional pressure CD to open.
Tendency of the discharge valve to vibrate or "chatter" is shown at E. Defective indicator mechanism may result in a card of this nature, however.
A constricted discharge passage or a discharge valve with too strong a spring will show cylinder discharge pressure CD higher than the effective pressure AB.
Sticking or binding of the suction valves will result in a line JH below the suction pressure FG. The distance LK represents the depression required to open the suction valves. If the sticking or binding continues throughout the suction stroke, the valves will probably not close until the piston has traveled some distance on the compression stroke. This is shown at I.
Line JH shows the action of constricted entrance or two strong valve springs. FG represents the pressure in the suction main.
Line JH indicates leakage past the piston.
The curvature at X would result from leaking valves or, in the case of high pressures, leakage past the piston.

Interpretation of indicator cards.

NEW PLAN DIFFERENT FROM 1929 COMPACT

LOS ANGELES, Calif., June 6.—The so-called interstate compact recommended by the Oil States Advisory Committee, which will be considered in August at Denver, Colo., is entirely different from the one rejected by the industry at Colorado Springs, according to a statement by Cicero Murray, chairman of the committee, while a visitor in Los Angeles.

The Colorado Springs plan, drawn up at Washington, proposed the states enter into a treaty to be ratified by the legislatures and by Congress, delegating control to an interstate body to be set up by the compact. The new plan contemplates nothing resembling this procedure, Mr. Murray said.

Under the present plan, the Oil States Advisory Committee, with such changes in membership from time to time as may be necessary, will continue to function but with no executive powers whatever. Its power will be limited to conferences, and agreeing upon legislation considered desirable. When such agreement has been reached, each delegate will report to the executive of his state, who may, if he deems it wise, recommend to the legislature that the legislation agreed upon be enacted. It will be entirely a matter for the wisdom of the legislature to adopt, reject or change the form of the legislation recommended and submitted. State sovereignty will remain unimpaired. It is not even expected that any state will adopt any bill submitted in its exact form but only in principle.

No congressional approval of the compact will be asked or required. However, it is expected that the several states and the advisory committee will unite with other interests in seeking from Congress modification of antitrust laws, legislation wherever interstate commerce is affected, and a protective tariff on foreign oil will be sought.

FIRST WELL TO GO DOWN 10,000 FEET

(Continued from Page 14)

this area by the Chanslor-Canfield Midway Oil Co. under the supervision of Ward Blodgett. The company's first hole was spudded in August, 1925, and abandoned because of mechanical trouble in April, 1928, after reaching a depth of 7,002 feet. This well was in Section 22-3-24.

In addition to discovering the Rincon Field of Ventura County, the Chanslor-Canfield Midway Oil Co. has established several deep drilling records. Its first record holder was No. 96 Olinda, a deep well in the Fullerton Field of Los Angeles Basin which was carried down to 8,201 feet in 1927. No. 2-A Hobson, the company's latest deep well, is 1,829 feet deeper than No. 96 Olinda, which at that time was generally recognized as quite an achievement.

Deep Drilling Records

Deep drilling records have been broken and re-established so many times during the past few years that it is rather difficult to list them chronologically. The deepest producing well in the world today is believed to be the Associated's No. 57 Lloyd in the Ventura Avenue Field producing approximately 5,000 bbls. per day from 8,823 feet. This well proved up a fourth zone at Ventura Avenue as highly productive and will ultimately lead to the drilling of still deeper holes in this prolific field. The Continental Oil Co.'s No. 24 Selover, a deep test in the Seal Beach Field of Los Angeles Basin, is 231 feet deeper than the Associated Oil Co.'s present record holder. This well failed to result in a natural flow when given a production test recently at 9,054 feet and officials are somewhat dubious as to whether commercial production will ultimately be secured. It was put on a compressor last week and under this artificial stimulation produced 200 bbls. of fluid, 65 per cent of which was mud and water. The Continental discovered the Seal Beach Field and its deep drilling is therefore of particular significance.

The Shell Oil Co. is working on a deep test in the Semitropic region of Kern County but the present status of this well indicates the probability that drilling operations in this area at the present time will be unsuccessful. This well, No. 1 Williams, in Section 17-27-23, was carried to 9,700 feet before the conclusion of drilling operations. The well is being plugged back by stages and tested out during the course of work. The deepest well drilled in the Santa Fe Springs Field of Los Angeles Basin was Oscar Howard's No. 7 Hathaway, a duster at 9,356 feet. The Shell's No. 11 Mesa, a dry hole at 9,280 feet, tops the list at Long Beach. This well was drilled with ordinary rotary equipment and no particular effort was made to establish a deep drilling record. The North American holds the present record for landing the longest string of large size pipe. In No. 1 Blauvelt at Kettleman Hills, the North American landed and cemented 6,766 feet of 13⅜-inch A.P.I. 68-pound casing. The pipe, weighing 459,884 pounds, was floated in with two float valves in 18 hours and 45 minutes and cemented in 1 hour and 30 minutes.

Mud pumps on No. 2-A Hobson, all-electric installation.

"DEPLETION" A MUCH MISUNDERSTOOD WORD

(Continued from Page 14)

from labor, or from both combined.'

"Understanding the term in this natural and obvious sense, it cannot be said that a conversion of capital assets invariably produces income. If sold at less than cost, it produces rather loss or outgo. Nevertheless, in many if not in most cases there results a gain that properly may be accounted as a part of the 'gross income' received 'from all sources'; and by applying to this the authorized deductions we arrive at 'net income.' In order to determine whether there has been gain or loss, and the amount of the gain, if any, we must withdraw from the gross proceeds an amount sufficient to restore the capital value that existed at the commencement of the period under consideration."

Applying this decision by means of a simple illustration we have in the case of the merchant and the oil producer this comparable situation: The merchant sells a shirt taken from his shelves for $1.25; the oil producer sells a barrel of oil taken from the ground for $1.25. The shirt cost the merchant 75 cents. The barrel of oil cost the producer in the ground $1.00. The current expenses of operating the business such as wages, interest, taxes, etc., allowed by the statute amounted in the case of the shirt to 30 cents and a similar amount in the case of the barrel of oil. We, therefore, may tabulate the data in this manner:

	Shirt	Barrel of oil
Gross proceeds of the sale..	$1.25	$1.25
Original cost	.75	.75
Gross income before exp...	.50	.50
Expenses allowed by law ..	.30	.30
Net income subject to tax.	.20	.20

Opponents of depletion deductions would deny the oil producer the right to deduct the 75 cents, cost of the barrel of oil in the ground, and would therefore tax him on an income of 95 cents per barrel while only taxing the merchant on the 20 cents net income. Would that be fair, reasonable or constitutional?

Profit Defined

The Supreme Court of Oklahoma, in the case of Carter vs. Phillips, 88 Okla. 208, 212 Pac. 747, construing a former income tax law of this State which made no specific allowance for depletion of oil and gas properties held that the taxpayer was entitled to deduct depletion according to the "unit of production" method prescribed by federal law and that,

"'Net income' means 'profit,' and profit is derived in any business in which capital is lost or depleted, only after the expenses of conducting the business are paid, and return is made of the capital invested which is gone.

"The 'unit of production' method of determining the taxable net income or profit in the oil or gas business is accomplished by a system of accounting by which is ascertained, as nearly as science will permit, the total amount of recoverable oil in the property, and to each barrel of this oil is assigned its part of the capital investment, and from the sale price of each barrel produced and sold there is deducted the expenses of producing it, and its proportion of the capital investment, leaving the balance as profit, and thus, when the property is exhausted, the operator has received back his capital and expenses, and accounted for his net income or loss."

"Income," says Carter vs. Phillips, "means profit." A tax on capital as distinguished from profit could not well be sustained as an income tax.

Federal Government Allows Percentage of Gross Proceeds as Depletion Deduction

After 18 years' experience with income taxation the federal Government recognizes the necessity for adequate deductions on account of depletion and has fixed a properly safeguarded percentage of gross proceeds of sale of oil produced, viz.: 27½ per cent, as the uniform measure of the deduction except in those cases where the taxpayer can show that the actual per unit cost in the case of a particular property would exceed such percentage, in which event the actual cost figure is allowed. The federal provision is based upon research and the examination of the history of thousands of oil properties. It takes into account the hazards of the industry and the necessity for a replacement fund as well as such items of capital investment as cost of the lease, cost of drilling wells, sums paid out to defend the title to the property and such other capitalized items as cost of exploration and geological work and prior dry holes drilled as a part of the enterprise of finding and developing the productive property. It is based upon average cost of oil discovered and in place.

The legislative history of the development of the federal percentage provision reveals that the peculiar and extraordinary hazards of the industry and the difficulty of computing and allocating capital values in the case of each lease or tract were taken into consideration. Prior to 1926 these capital values were established by appraisals or valuations but this method proved difficult of administration, so we find Dr. T. S. Adams, the treasury advisor, testifying before a congressional committee in 1925 to the effect that a simple percentage provision should be substituted for the valuation method and that it should contain an allowance for hazard. He said:

"I think, in general, certain carefully selected percentages of gross income, or operating income, would have been infinitely better for the taxpayer, for the United States, and for everybody else had they been adopted by the Government from the beginning, and it may be distinctly practicable to adopt them from now on if Congress wants to do it. These hazardous industries have an allowance for risks and hazards. It should be a general allowance, but it should be a simple allowance, and there are simpler methods of making allowances than those authorized by statute."

Following this recommendation the Congress adopted the present percentage deduction.

Hazards in Oil Producing Industry Are Extraordinary

That the oil producing industry is subject to the usual hazards which beset other industries is shown by its present depressed condition. That, in addition, it has extraordinary hazards perculiar to itself is shown by a cursory examination of the statistics of well completions revealing the dry hole menace and the irregularity of income.

It is well known of course that 75 to 90 per cent of the strictly wildcat or exploratory wells are dry, the percentage varying with different years. But taking the total drilling operations, which include inside locations and those close to production as well as those far removed from proven territory, the figures for 1930 show that in all the territory east of California there were 6,529 dry holes drilled in that year, which number constituted 32.3 per cent of all the wells drilled in that territory that year. At an average cost of $50,000 each these failures represented a capital outlay of $326,450,000, which the industry can only recover, if at all, through the production of its successful wells. In addition, 2,853 or 14.1 per cent were gas wells, a majority of which were unremunerative. Also, 4,499, or 22.3 per cent, were small wells of 25 bbls. per day or less and will never pay out. So it may be safely said that two-thirds of the completions are either total or partial failures. These figures for 1930 follow closely the general average for the past 11 years.

The hazard and risk may be illustrated in another way. Since the oil well and the oil property declines rapidly in production, each producer who desires to remain in business must acquire and test new leases from time to time in order to find new properties to replace those which are becoming exhausted. A record of these test wells or the initial well on each tract or lease, whether located close to or remote from production, shows that in Kansas and Oklahoma, in 1930, 63 per cent failed to produce oil. In 1929 the percentage of failure was 64.1 per cent; in 1928, 65 per cent; in 1927, 63.7 per cent, and in 1926, 67.3 per cent. It must be admitted that any industry faced with such a barrier to its continued existence is indeed beset with extraordinary hazards. The replacement fund idea involved in the depletion provision and as representing the estimated capital outlay necessary to replace the oil taken out each year appears more and more justified as we examine the facts of the industry.

Disallowance of Depletion Deduction Would Sound the Death Knell of Small Producer

An exceedingly important consideration involved is the welfare of the small, independent producer, or so-called "little fellow" who has limited capital and who cannot, like the large well-financed organizations, buy proven or semiproven properties but must depend upon exploration and development of his producing property as the culmination of perhaps years of effort involving many disastrous dry holes. In his unsuccessful years he has no income against which to charge the cost of his dry holes. When he finally finds a producing property the oil therein represents the only capital fund at his command. If the high rates of the federal and state income tax laws are to be permitted to eat up his capital fund in successful years he has no means with which to proceed and to replace his property when exhausted. The depletion deduction returns his capital to him without diminution by tax. With depletion allowed, he pays income tax only on his profit. Without this provision he could not long survive the severe competition characteristic of the oil producing business.

He pays the 30-mill gross production tax on the value of his property without regard to profit or loss; it is his ad-valorem tax. The income tax is in addition and should apply to net income only.

Farmers and Business Men Should Be Alive to Necessity for Fair Treatment for Oil Industry

Enactment of an income tax law in Oklahoma without allowing a deduction for depletion such as that worked out and applied by the federal Government would have a paralyzing effect upon the industry in this State. A generally overproduced condition has caused prices to fall to a point below the average cost of production. Therefore, producers will naturally seek the states and localities where costs of production, including taxes, are

lowest and will withdraw from states and localities where costs, including taxes, are highest. They will be compelled to do this in the interest of self-preservation.

Abandonment of leases and small wells, reduction of bonuses and rentals offered farmers for leases on their lands or an entire absence of demand for leases on Oklahoma lands will follow in the wake of a denial of the depletion deduction or the enactment of unusually high income tax rates. Withdrawal by the oil producers from Oklahoma farms would be a severe blow to Oklahoma farmers and business men who, for years, have relied upon rentals, bonuses and royalties for a cash crop with which to pay interest, taxes and mortgages and to stimulate general business.

To put a concrete example, surrendering leases on 20,000,000 acres of Oklahoma land means cutting off from Oklahoma farmers $20,000,000 per annum of income, to say nothing of related activities and income incident to oil development. Due to bad conditions, a number of leases have already been surrendered and some rentals have been reduced. Drastic tax increase would be the proverbial last straw necessary to break the back of the business situation in this State.

With Kansas on the north and Texas on the south beckoning to the oil producer and offering fair treatment and prolific oil fields as an inducement to operate there, Oklahoma is entering an era of most intense competition with those other states to retail her oil producers and their investing and developing activities. This would be a most unfortunate time to show hostility to the industry which has meant so much to Oklahoma's material welfare.

DALLAS MEETING CRYSTALLIZES VIEWS

(Continued from Page 13)

Windfohr, Graham; John Gholson, Ranger; Charles F. Roeser, Fort Worth; Roy B. Jones, Wichita Falls; J. S. Bridwell, Wichita Falls; William Fleming, Fort Worth; T. F. Hunter, Wichita Falls; John F. O'Donohoe, Wichita Falls; C. M. Caldwell, Abilene; T. F. Grisham, Abilene; George Morgan, San Antonio; J. D. Collett, Fort Worth; B. F. Weekley, Fort Worth; E. A. Landreth, Fort Worth; Joe M. Weaver, Eastland; C. L. Morgan, Fort Worth; Leon F. Russ, Longview; D. Harold Byrd, Dallas; Marrs McLean, Beaumont; George Sawtelle, Houston; Frank P. Zoch, San Antonio; Beeman Strong, Beaumont; Dr. F. L. Thomson, San Antonio; Ed McMahon, San Antonio; Gilbert Denman, San Antonio; Tom E. Cranfill, Dallas; C. F. Richards, Lockhart; H. H. Weihert, Seguin; Al Buchanan, Tyler, and C. H. Pate, Tyler.

CONSIDER UNIT PLAN FOR EAST TEXAS AREA

HOUSTON, Tex., June 9.—Proposals for a unit plan of development and production of the East Texas area were brought out at a meeting of a committee of independent operators with W. S. Farish, president of the Humble Oil & Refining Co., yesterday. Confidence that the plan was feasible and would do much to solve the East Texas situation were expressed by those at the meeting and the committee left Houston determined to do all possible with the assistance of the major companies assured, to put some such plan in operation.

The committee, which came to Houston to call on Mr. Farish, was composed of Tom Cranfill, W. R. Witherspoon, Clint Murchison and F. Kirk Johnson.

Under the plan proposed, East Texas would be divided into units, as has been done in other fields, with 20 acres as the base. Future development would be restricted to one well to each unit with production allowances determined accordingly. Suggestions that the production allowance of East Texas also should be increased to a minimum of 225,000 bbls. with this figure to be boosted to a maximum of possibly 500,000 bbls. also were made at the conference.

COMMITTEE SUGGESTS AN ADVISORY BOARD

(Continued from Page 24)

sive differential between tank wagon and retail selling prices. There was unanimity of opinion that such differential should not exceed 3 cents per gallon.

All wholesale and retail prices should be conspicuously posted at place of sale and rigorously maintained. Each marketing company should refuse to supply dealers cutting posted prices and should refuse to sell large consumers who resell in violation of their contracts. Each marketing company should be responsible for the maintenance from refinery to consumer of posted prices on its products. To control retail selling price, each marketing company should, where necessary, place its goods in dealers' hands on consignment.

Any marketing company desiring to increase the number of its service stations should do so, as far as possible, by purchase of existing stations. Stations now operating are too numerous; their number should be decreased.

Modification of the antitrust laws, permitting actions obviously in the public interest, is imperative.

Recent California legislation is in the interests of the public and the industry. The legislation referred to is: (a) The Sharkey bill providing for control of production. (b) The Sharkey bill regulating town lot drilling. (c) The bill permitting a manufacturer to control the resale prices of branded products. (d) The bill fixing a state standard for gasoline and prohibiting substitutes. (e) The bill to enforce the collection of gasoline taxes.

To make effective such reforms as the antitrust laws will permit, the industry, to the benefit of all concerned, might well designate temporarily a board or individual authorized to consider impartially such industrial problems as might be presented, render advisory opinions, and seek public co-operation.

RICHFIELD SERVICE PLANES IN MANEUVERS

(Continued from Page 119)

the highway while moving gasoline to the various fields. The Nassau County police immediately offered every co-operation in the fueling program, and each morning a police escort of 10 to 12 motorcycle patrolmen met the Richfield tank wagon fleet at the city limits and convoyed the trucks to the different fields where the Army planes were quartered during their stay here.

Because of facilities for storage and rapid loading of trucks, the main supply of aviation gasoline for the Army air fleet was established at Richfield's Long Island City plant, with an additional 50,000 gallons of aviation gasoline stored at its Great Neck, Long Island, plant, which was used as a relay bulk station from which point emergency supplies could be drawn at any time the Army should run ahead of its estimated gallonage. As the project progressed, it was found advisable to load some of the tank trucks out of this plant rather than send the trucks back each night to the main bulk terminal at Long Island City.

Official Inspection

Each morning all loaded gasoline trucks were checked out by an Army inspector and the total number of gallons contained in each truck checked and approved so that an accurate record of all gallonage delivered to each field was maintained. At night the gasoline at each airport was pumped into one or more trucks, which were either left on the field or stored conveniently at the nearest bulk plant. The gallonage contained in these trucks was checked out of the total deliveries each day and these trucks were again checked into the field on the following day by an Army inspector. Each night all of the equipment in service that day was carefully inspected at the company's plant to be sure it was ready for service on the following day.

Lubricating oil was distributed to the five fields in 55-gallon drums and 5-gallon cans. The lubricating crew on each field was supplied with an assortment of dispensing equipment such as pumps, 5 and 10-gallon milk cans, 2-gallon, 1-gallon and 1-quart measures, empty 1-gallon and quart cans, and eight funnels. Oil was moved to the various groups on each field by motorcycle side cars equipped with trailers or bodies large enough to carry the quantity of oil required for each line of ships. While the company had been advised that the Army planes would be equipped with funnels to be used for servicing oil into the ships' tanks, it was found on arrival that only in a few instances were the planes so equipped. This made it necessary for the company to secure on short notice a sufficient supply of funnels to take care of the oil servicing.

The contract for the oil failed to specify what disposition was to be made of the drained oil, but on arrival on the field the Richfield servicing crew was informed by army officers that all oil drained from the ships would be captured and shipped back to the army base for reclaiming. The company supplied a number of shipper drums to take care of all waste oil so that it could all be collected and shipped back for reclaimation. When oil changes were made at any of the fields, a 10-gallon milk can with a large opening was used to catch the waste oil as it was drained from the ship. This waste oil was carried to the head of the ship line where it was dumped into drums stationed there for that purpose.

DIRECTORS OF A.P.I. MEET IN FORT WORTH

FORT WORTH, Tex., June 6.—Problems confronting the petroleum industry, especially those resulting from failure of East Texas to observe proration of crude oil production, were considered at a meeting of the board of directors of the American Petroleum Institute held here yesterday. The board adopted a resolution which recommended that purchasers of crude oil limit the quantities they buy to the allowable production of pools where purchases are made. Another resolution urged companies to adopt unitization both in principle and practice and a third resolution adopted recommended use, as far as possible, of materials complying with the A.P.I. standards.

The resolution on overproduction, in part, follows:

"Resolved, that the board of directors of the American Petroleum Institute urges that the State of Texas place the production of crude oil within its borders in line with the demand therefor, with due reference to the economic supply from other states, to the end, not only of the stabilization of the petroleum industry, both of the United States and of Texas, but also of the conservation of the wealth of the State of Texas itself, and

"Be it further resolved, that the board of directors of the American Petroleum Institute earnestly and unreservedly condemns the policy of producing, transporting or purchasing crude oil from any property in amounts greater than the current daily allowable production for that property as fixed by the orders of the conservation authorities, so long as they are not attempting to limit production below the legitimate market demand, and that it urgently requests all purchasers of crude oil strictly to refrain from making purchases under contracts, the terms of which may conflict with the present or future orders of the state conservation authorities for ratable taking, and thereby perpetuate the present distressful situation."

Directors who attended the meeting follow:

W. R. Boyd, Jr., Lacey Walker, Amos L. Beaty, R. A. Broomfield, E. R. Brown, E. J. Bullock, John M. Crawford, O. D. Donnell, W. S. Farish, W. S. Fitzpatrick, Wirt Franklin, S. A. Guiberson, Jr., W. T. Holliday, L. J. Drake, Roy B. Jones, C. H. Kountz, J. F. Lucey, L. L. Marcell, P. M. Miskell, Edgar J. Marston, E. T. Moore, D. J. Moran, R. R. Penn, J. Edgar Pew, Frank Phillips, E. B. Reeser, H. F. Sinclair, and Robert W. Stewart.

DEVELOPMENTS IN OIL SECURITIES

(Continued from Page 120)

dividends and interest received was $110,729 for the quarter ended March 31, 1931.

Colon Oil

Report of Colon Oil Corp. and its subsidiary, the Colon Development Co., Ltd., controlled by Royal Dutch-Shell group, for period from January 31, 1930 (commencement of production operations), to December 31, 1930, shows consolidated loss of $1,289,944 after intangible drilling, production and general expenses, depreciation, interest and amortization of debenture discount.

Mexican Eagle Oil

Mexican Eagle Oil, subsidiary of Royal Dutch-Shell, has declared a dividend of 6 per cent on the ordinary shares of 1930, the same as paid for 1929. Canadian Eagle Oil, also a subsidiary of the Royal Dutch-Shell, has declared a dividend of 12 Canadian cents for 1930 on the ordinary shares, or approximately 4 per cent, unchanged from 1929.

Honolulu Oil

Honolulu Oil Corp. has omitted the quarterly dividend of 50 cents due at this time. The company has reduced the $1,000,000 note in the balance sheet of December 31 to $500,000.

Buckeye Pipe Line

At the annual meeting of stockholders of the Buckeye Pipe Line Co., held at Lima, Ohio, the present board of directors was re-elected. At a subsequent meeting of the board the present officers were re-elected.

Associated Oil

Associated Oil Co. declared a dividend of 35 cents for the quarter, payable June 30 to stock of record June 13. Previously 50 cents quarterly had been paid.

Tide Water Oil

Tide Water Oil Co. declared a dividend of 15 cents on the common, payable June 30 to stock of record June 13. Previously the company has been paying quarterly dividends of 20 cents.

Tide Water Associated Oil Co. declared the regular quarterly dividend of $1.50 on the preferred, payable July 1 to stock of record June 13.

Pan American Petroleum

Directors of Pan American Petroleum & Transport Co. have declared dividends of 40 cents on the common and Class "B" common stocks. This is the first declaration since 1927. December 20 of that year the directors omitted the dividends due to the necessity for conserving cash for expansion and contingencies. Prior to that date dividends had been at the rate of $1.50 quarterly on the common from April, 1925, to September, 1927, when a reduction to $1 was voted. Ninety-five per cent of the stock of Pan American is owned by Standard Oil Co. of Indiana.

Twenty Representative Stocks

The Oil and Gas Journal's weekly average price of 20 representative petroleum stocks listed on the New York Stock Exchange and New York Curb, based on closing quotations for Wednesday, was as follows:

Oct. 15	35.21	Feb. 11	28.76
Oct. 22	31.88	Feb. 18	28.53
Oct. 29	32.80	Feb. 25	29.32
Nov. 5	31.77	Mar. 4	27.67
Nov. 12	30.18	Mar. 11	26.53
Nov. 19	31.54	Mar. 18	26.73
Nov. 26	30.86	Mar. 25	26.35
Dec. 3	30.53	Apr. 1	24.80
Dec. 10	28.57	Apr. 8	25.53
Dec. 17	25.42	Apr. 15	24.72
Dec. 24	25.68	Apr. 22	22.73
Dec. 31	26.15	Apr. 29	20.54
Jan. 7	27.56	May 6	20.74
Jan. 14	27.31	May 13	20.38
Jan. 21	27.55	May 20	19.25
Jan. 28	27.26	May 27	18.35
Feb. 4	27.26	June 3	18.00

MANAGER OF OIL COUNTRY SALES

J. J. Kennedy, general manager of sales of the National Tube Co. of Pittsburgh announces that, effective June 5, W. J. McKee, Philtower Building, Tulsa, has been appointed manager of sales in charge of oil country goods, oil and gas line pipe in the territory of Oklahoma, Kansas and Arkansas.

MID-CONTINENT RUNS UP TO 57,000 BARRELS

(Continued from Page 16)

sions in the runs in plants scattered throughout the greater part of the balance of the North Central Texas area. The Humble Oil & Refining Co. has temporarily discontinued operating its Breckenridge, Tex., refinery and the Tidal Western Refining Co. at Burkburnet has also shut down its plant. One plant resumed operations, namely the Iowa Park Producing & Refining Co. at Iowa Park. The Dale Oil & Refining Co. had been shut down for nearly a month but has resumed full operations and will run 2,500 bbls. daily during June.

West Texas

Refining activities in the West Texas area have been inclined to lag somewhat because of the freight advantage of the East Texas and Oklahoma plants into the north central states as a common marketing territory. West Texas enjoyed low crude prices during the period of flush production there and since conditions have settled to a normal operating basis, crude price schedules have been established more in line with the balance of the Mid-Continent. Despite the greater marketing competition offered this group, the West Texas refinery runs will be increased 4,600 bbls., the higher schedule reflecting a general revision upward in practically all plants rather than an important increase in a few. There is no change in the status of the operating and shut-down plants.

Kansas Operations

Kansas refineries will operate on a slightly higher schedule of runs during June than May, the increase being general throughout the list. This increase amounts to 7,100 bbls. All plants are operating and there are no shut-down plants in Kansas which have operated over the past year.

North Louisiana and Arkansas

Practically no change is reported in the operations of the North Louisiana and Arkansas group of refineries. This is reflected in the small revision in the total crude runs compared to May. The total increase amounts to only 200 bbls. daily.

REFINERY OPERATIONS IN OKLAHOMA

(Plants which have been in operation during the past year)

Company and location—	Daily capacity	Runs June 1	Runs May 1
Altitude Petroleum Corp., Oklahoma City	3,000	250	200
Anderson-Prichard Oil Corp., Cyril	5,000	4,500	4,200
Barnsdall Refineries, Inc., Barnsdall	4,000	3,000	3,000
Barnsdall Refineries, Inc., Okmulgee	10,000	6,000	4,500
Bell Oil & Gas Co., Grandfield	4,500	2,000	2,000
Black Gold Refining Co., Oklahoma City	1,500	850	800
Capital City Refining Co., Oklahoma City	2,500	300	400
Century Petroleum Co., Tulsa	500	(*)	200
Century Petroleum Co., Oklahoma City	2,500	1,500	(*)
Champlin Refining Co., Enid	16,000	8,000	8,000
Citizens Refining Co., Seminole	1,000	(*)	(*)
Continental Oil Co., Sapulpa	10,000	1,500	1,500
Continental Oil Co., Ponca City	38,000	25,900	17,600
Cushing Refining & Gasoline Co., Blackwell	1,800	1,500	1,500
Cushing Refining & Gasoline Co., Cushing	3,500	2,500	2,500
Deep Rock Oil Corp. (Shaffer), Cushing	10,000	10,000	10,000
Eason Oil Co., Enid	5,000	3,000	3,000
Empire Oil & Refining Co., Cushing	5,000	(*)	(*)
Empire Oil & Refining Co., Okmulgee	4,000	4,000	4,000
Empire Oil & Refining Co., Ponca City	12,000	10,000	11,000
Garber Refineries, Inc., and Omar Refining Co., Garber	3,500	2,200	2,200
Globe Oil & Refining Co., Blackwell	7,500	6,200	6,000
Globe Oil & Refining Co., Cushing	15,000	5,000	5,000
Gulf States Corp., Oklahoma City	2,500	2,000	1,000
Illinois Oil Co., Cushing	3,000	(*)	(*)
Imperial Refining Co., Ardmore	5,000	(*)	(*)
Johnson Oil Refining Co., Cleveland	6,000	5,000	4,900
McCullough Oil Co., Oklahoma City	2,000	(*)	(*)
Mid-Continent Petroleum Corp., West Tulsa	40,000	20,000	21,000
Marathon Oil Co., Boynton	2,500	(*)	(*)
Marathon Oil Co., Bristow	5,000	3,400	3,500
Morgan Development Co., Tonkawa	3,000	(*)	(*)
Peppers Gasoline Co., Covington	1,000	700	700
Phillips Petroleum Co., Okmulgee	5,000	5,000	3,300
Producers Oil Co., Bristow	2,500	2,000	1,500
Producers & Refiners Corp., West Tulsa	6,000	4,000	4,000
Pure Oil Co., Ardmore	5,000	2,200	2,000
Pure Oil Co., Muskogee	9,000	7,500	7,500
Rock Island Refining Co., Beckett	3,500	3,500	3,500
Sinclair Refining Co. (Pierce), Sand Springs	8,000	5,000	6,500
Sun Oil Co., Yale	5,000	4,000	4,400
Sunray Oil Co., Allen	7,000	4,000	4,000
The Texas Company, West Tulsa	15,000	13,000	12,000
Texas Pacific Coal & Oil Co., Wynnewood	3,000	2,000	2,000
Tidal Refining Co., Drumright	15,000	10,000	10,000
Western Oil Corp., Beckett	2,000	1,500	1,400
Wewoka Refining Co., Wewoka	2,000	(*)	(*)
White Oak Corp., Allen	8,000	3,000	(*)
Wilcox Oil & Gas Co., Bristow	5,000	2,000	2,000
Wirt Franklin Petroleum Corp., Ardmore	4,000	3,000	3,000
Yale Oil Corp., Yale	2,000	1,000	1,100
York Refining Co., Oklahoma City	3,000	700	(*)
Total	334,300	203,200	186,900

*Shut down.

REFINERY OPERATIONS IN KANSAS

(Plants which have been in operation during the past year)

Company and location—	Daily capacity	Runs June 1	Runs May 1
Altitude Petroleum Corp., Chanute	5,000	2,000	2,000
Barnsdall Refineries, Inc., Wichita	4,000	2,200	1,900
Derby Oil Co., Wichita	7,500	4,000	4,000
Eldorado Refining Co., Eldorado	4,500	3,000	2,800
Golden Rule Refining Co., Wichita	1,500	1,000	900
Kanotex Refining Co., Arkansas City	12,000	7,000	7,000
National Refining Co., Coffeyville	6,500	4,000	4,000
Phillips Petroleum Co., Kansas City	6,000	6,000	5,000
Shell Petroleum Corp., Arkansas City	22,000	14,000	14,000
Sinclair Refining Co., Coffeyville	12,000	10,000	9,000
Sinclair Refining Co., Argentine	9,500	5,000	5,000
Skelly Oil Co., Eldorado	23,000	14,000	13,500
Standard Oil Co. of Kansas, Neodesha	20,000	7,000	6,000
Vickers Petroleum Co., Potwin	3,500	2,300	2,300
White Eagle Oil Corp., Augusta	13,000	13,000	10,000
Total	150,000	95,000	87,900

*Shut down.

REFINERY OPERATIONS IN NORTH LOUISIANA

(Plants which have been in operation during the past year)

Company and location—	Daily capacity	Runs June 1	Runs May 1
Bayou State Refining Co., Hosston	750	200	750
Crystal Oil Refining Co., Shreveport	14,000	(*)	(*)
D'Artois Oil Refining Co.	50	25	25
Louisiana Oil Refining Co., Shreveport, Bossier	19,000	16,000	16,000
Spartan Refining Co., Shreveport	10,000	9,000	8,500
Stanolind Oil & Gas Co., Superior	3,500	2,800	2,550
The Texas Company, Shreveport	7,000	(*)	(*)
Total	54,300	28,025	27,825

*Shut down.

REFINERY OPERATIONS IN ARKANSAS

(Plants which have been in operation during the past year)

Company and location—	Daily capacity	Runs June 1	Runs May 1
James H. Berry & Sons, Waterloo	2,000	1,000	1,000
Henry H. Cross Co., Smackover	6,000	4,000	4,000
Houston Oil Co., Camden	6,000	3,250	3,100
Kettle Creek Refining Co., Pearson	5,000	2,000	2,000
Lion Oil & Refining Co., El Dorado	12,000	6,600	6,500
Macmillan Petroleum Products Co., Norphlet	1,800	1,600	1,600
Ouachita Valley Refining Co., El Dorado	2,000	1,100	1,250
Root Refining Co., El Dorado	10,000	4,700	4,700
Simms Oil Co., Smackover	3,000	2,700	2,800
Union Asphalt Co., El Dorado†	.....	.....	.....
Total	47,800	26,950	26,950

*Shut down. †Reduces residuum purchased from Lion Oil & Refining Co. to asphalt. No crude run.

REFINERY OPERATIONS IN WEST TEXAS

(Plants which have been in operation during the past year)

Company and location—	Daily capacity	Runs June 1	Runs May 1
Big Spring Refining Co., Big Spring	2,500	1,000	2,400
Big Lake Refining Co., Big Lake	2,000	(*)	(*)
Bluebonnett Oil Refining Co., Wickett	5,000	(*)	(*)
Burford Oil Co., Pecos City	6,000	5,300	4,500
Coltex Refining Co., Colorado	10,000	6,800	6,800
Cosden Oil Co., Big Spring	15,000	7,500	6,000
Deer Oil Corp., Luling	2,500	(*)	(*)
Grayburg Oil Co., San Antonio	6,000	(*)	(*)
Great West Refining Co., Big Spring	3,500	3,000	3,000
Gulf Oil & Refining Co., Sweetwater	5,000	5,000	5,000
Humble Oil & Refining Co., San Antonio	5,000	2,000	1,700
Humble Oil & Refining Co., McCamey	15,000	13,000	8,800
Magnolia Petroleum Co., Luling	5,000	5,000	4,200
Marathon Oil Co., Del Rio	5,000	1,800	1,800
Minko Refineries, Inc., Laredo	1,500	500	500
Mid-Tex Refining Co., Midland	2,500	(*)	(*)
Motor Fuel Products Co., Laredo	2,000	500	500
Pasotex Petroleum Co., El Paso	14,000	9,000	9,500
Pioneer Oil & Refining Co., Somerset	1,500	400	350
Richardson Refining Co., Big Spring	6,000	(*)	(*)
Rio Grande Oil Co., El Paso	6,000	(*)	750
San Angelo Refining Co., San Angelo	2,000	200	200
Sweetwater Oil & Refining Co., Sweetwater	2,000	(*)	(*)
The Texas Company, San Antonio	3,000	3,500	2,500
The Texas Company, El Paso	2,000	(*)	(*)
Tonkawa Petroleum Co., Pyote	5,000	1,100	1,200
Texas Mexican Oil & Refining Co., Laredo	600	500	500
Texas Petroleum Products Co., Somerset	1,500	700	700
Wickett Refining Co., Wickett	2,500	500	300
Total	147,600	66,300	61,700

*Shut down.

REFINERY OPERATIONS IN NORTH CENTRAL TEXAS

(Plants which have been in operation during the past year)

Company and location—	Daily capacity	Runs June 1	Runs May 1
Allstate Refining Co., Thrall	3,000	2,000	1,800
American Refining Properties, Wichita Falls	6,000	3,000	3,300
Archer Refining Co., Megargel	1,500	650	300
Atlantic, Pacific & Gulf Refining Co., Wichita Falls	5,000	(*)	(*)
Beacon Oil & Refining Co., Friars Switch	2,500	2,000	800
Central Texas Refining Co., Angus	4,000	600	600
Continental Oil Co., Wichita Falls	6,000	3,700	3,300
Dale Oil & Refining Co., Electra	4,000	2,500	2,800
Deer Oil Corp., Brownwood	3,000	(*)	(*)
Dixon Creek Oil & Refining Co., Kings Mill	3,500	3,000	3,500
East Texas Refining Co., Henderson	6,000	5,300	2,500
East Texas Refining Co., Longview	10,000	10,000	3,000
Empire Oil & Refining Co., Gainesville	5,000	3,600	3,800
Falls Refining Co., Wichita Falls	2,000	1,000	800
Gulf Refining Co., Fort Worth	10,000	5,600	6,000
Humble Oil & Refining Co., Breckenridge	2,000	(*)	700
Humble Oil & Refining Co., Chilton	4,000	700	990
Humble Oil & Refining Co., Boggy Creek	5,000	1,600	1,100
Independent Oil Refining Co., Arp	500	150	.....
Iowa Park Producing & Refining Co., Iowa Park	2,500	500	(*)
Kent Refining Co., Minerva	2,000	500	700
LaSalle Petroleum Co., Burkburnett (Noble)	3,500	(*)	(*)
Macmillan Petroleum Co., Isom	8,000	6,000	6,000
Magnolia Petroleum Co., Fort Worth	12,000	4,500	4,500
Magnolia Petroleum Co. (White Eagle plant), Fort Worth	6,000	3,500	4,000
Magnolia Petroleum Co., Corsicana	5,000	5,000	4,600
Marathon Oil Co., Fort Worth	5,000	4,000	4,000
Muenster Refining Co., Muenster	300	40	75
Olney Oil & Refining Co., Olney	2,500	2,000	2,100
Oriental Oil Co., Dallas	5,000	1,000	1,000
Overton Refining Co., Overton	3,500	2,500	.....
Panhandle Refining Co., Wichita Falls	5,000	3,800	3,400
Petroleum Refractionating Co., Pampa	6,100	6,100	6,000
Phillips Petroleum Co., Isom	15,000	15,000	10,000
Primrose Refining Co., Wichita Falls	2,500	2,300	2,500
Simms Oil Co., West Dallas	4,500	4,000	4,000
Southland Refining Co., Olney	1,000	200	200
Star Refining & Producing Co., Fort Worth	1,500	1,000	1,000
Superior Refining Co., Tiffin	2,000	200	200
Tarrant Petroleum Co., Grand Prairie	2,500	(*)	(*)
Taylor Refining Co., Taylor	6,000	3,000	3,000
Taylor Refining Co., Tyler	15,000	10,000	.....
Taxman Refining Co., Wichita Falls	2,500	2,000	1,500
The Texas Company, Dallas	16,000	15,000	15,000
The Texas Company, Amarillo	4,000	3,000	3,000
Thurber Refining Co., Thurber	500	300	.....
Tidal Western Refining Co., Burkburnett	3,000	(*)	1,500
Texas Pacific Coal & Oil Co., Fort Worth	3,600	2,500	2,000
Texas Pacific Coal & Oil Co., Caddo	1,000	500	500
Waggoner Refining Co., Electra	3,400	2,600	1,300
Wilcox Oil & Gas Co. (Pampa Refining Co.), Pampa	4,000	2,000	2,000
Total	240,050	148,440	119,365

*Shut down.

DOMESTIC EXPORTS OF PETROLEUM AND PETROLEUM PRODUCTS

		Month of April		4 mos. end. Apr.	
		1930	1931	1930	1931
Petroleum—Crude	Bbls.	1,899,665	1,825,813	7,382,269	7,040,608
Petroleum Crude	$	2,323,417	1,546,021	9,601,483	7,012,685
Total refined petroleum	Bbls.	11,619,823	7,548,991	43,502,993	30,740,266
Total refined petroleum	$	41,601,150	20,869,758	161,381,008	86,443,489
Gasoline, naphtha and other light products	Bbls.	5,707,905	3,987,348	21,628,666	15,077,102
Gasoline, naphtha and other light products	$	23,000,353	10,704,617	91,292,997	43,499,441
Oils, illuminating	Bbls.	1,628,797	753,088	6,394,152	4,153,519
Oils, illuminating	$	5,435,706	2,499,527	25,058,462	12,409,765
Gas and fuel	Bbls.	3,396,725	2,093,961	11,995,601	9,009,640
Gas and fuel	$	3,430,305	2,010,452	12,037,699	8,424,703
Lubricating	Bbls.	972,658	705,214	3,427,292	2,466,113
Lubricating	$	9,507,624	5,553,553	32,156,130	21,675,485
Other refined petroleum	Bbls.	13,746	5,880	57,282	33,892
Other refined petroleum	$	237,162	101,609	835,720	434,095
Paraffin wax	Lbs.	20,061,651	21,368,874	91,355,510	97,398,574
Paraffin wax	$	787,284	839,379	3,632,711	3,022,924

Oil States Advisory Committee Adopts Resolution on Tariff

Cicero I. Murray, chairman of the Oil States Advisory Committee, writes from Los Angeles, Calif., to The Oil and Gas Journal inclosing copy of a resolution that was passed and adopted by a unanimous vote of the Oil States Advisory Committee in session at Los Angeles, Calif., on June 1, as follows:

"Whereas, the attention of the Oil States Advisory Committee has been directed to numerous attacks made by special writers for trade journals and other publications purporting to convey the idea and impression that this committee has failed or neglected to make its position clear and positive upon the issue of a tariff on crude petroleum imports and its derivatives, and

"Whereas, this committee feels that these attacks are unjust, uncalled for and based upon a malicious attempt to damage the prestige of this committee and to hinder and obstruct the work of the Independent Petroleum Association of America in its efforts to secure a proper tariff upon crude oil and its derivatives, and

"Whereas, the Seventy-first Congress last in session failed to pass a tariff on crude oil and its derivatives or to pass the Capper Bill restricting the importation of crude oil and its refined products, and

"Whereas, in earnest effort to further pursue relief measures, the Honorable Ross S. Sterling, governor of the State of Texas, and the Honorable William H. Murray, governor of the State of Oklahoma, at a called meeting held in Fort Worth, Tex., on the twenty-eighth day of February last past, authorized and despatched a request to the Honorable Herbert Hoover, President of the United States, that he, by negotiation and conference with the importing companies, obtain by consent and agreement, a proper limitation of crude oil imported into the United States and that this limitation be in strict harmony with the legal and voluntary curtailment and proration in force within the United States, and

"Whereas, the Honorable Herbert Hoover, President of the United States, did accomplish, through and with the aid of his honorable secretaries, such an agreement with the importing companies has resulted in a reduction not only of crude importations but of their foreign production as well, this reduction amounting to 25 per cent of the quantities imported and produced from foreign fields in the year of 1930, and

"Whereas, the United States Tariff Commission, under the direction of the American Congress, conducted an investigation which revealed the fact that the cost of producing and importing Mid-Continent oil to the Atlantic Seaboard amounted to $1.19 per barrel more than cost of producing and transporting the same unit of South American crude petroleum.

"Now, therefore, be it resolved by this committee, convened in special meeting in the city of Los Angeles, Calif., on this first day of June, 1931, that in order to protect the American market for the American producers, the Congress of the United States pass a tariff law imposing a tariff of not less than $1 per barrel on crude oil imported into the United States and a further tariff of not less than 50 per cent ad valorem on all refined products of crude oil based upon the domestic value thereof; and

"Be it further resolved that the oil-producing states adopt such proper and adequate legislative control measures to the end that the benefits derived from the application of a tariff or curtailment of imports shall not be offset or annulled by uncontrolled and uneconomic production methods in the oil-producing states within the United States; and

"Be it further resolved that we do hereby pledge our unanimous support to that end."

GAS WELLS IN WAYNE, SALT WATER IN TIOGA

CORNING, N. Y., June 6.—The Lycoming Natural Gas Co.'s No. 2 Farr, in Lawrence Township, Tioga County, Pennsylvania, stood with the hole filled up 3,000 feet with salt water coming from Oriskany sand at 4,196 feet. When the well penetrated the sand it had a showing of about 300,000 feet of gas, but water broke in. The well is located between the company's No. 1 Farr, a gas producer, and No. 1 Decker, a dry hole. The Lycoming Gas Co.'s No. 1 Decker did not find any sand down to a depth of 4,338 feet. Pennsylvania Power & Light Co.'s No. 1 Burdett was 38 feet in the Oriskany sand when last heard from but only a light showing of gas had been found. Several wells in the Tioga district are drilling close to sand depth.

On the New York side of the field the Bigelow Gas Corp.'s No. 2 Bigelow, northeast of the village of Wayne and overlooking Keuka Lake, was completed before a holiday crowd of 2,000 people. It was reported to have gauged 11,000,000 feet of gas initially. The Olean Finger Lakes Land Co.'s No. 1 Wixon, also in the Wayne Field, started at the rate of 2,000,000 feet. There are 41 gas wells in the field.

Developments in the Dundee-Wayne Field were marked by completion of the Belmont Quadrangle line from the Wayne through the Dundee fields and into the Dundee-Horseheads line formerly owned by the Home Gas Co. All of the Belmont wells in the Dundee Field are connected to this line as well as some of the wells owned by other companies. Crescent Producing Co. is selling gas to the Belmont organization.

Other wells in the Wayne Field are rapidly nearing the Oriskany sand. With the record for drilling wells held by E. H. Stone, at nine days, and other wells in the field being completed in less than three weeks of drilling, rigs go up, drill, produce gas and are torn down with considerable speed. The drilling is all short of 1,800 feet, however, and makes for rapid completion of wells.

LOWER LEVELS IN REFINERY QUOTATIONS

(Continued from Page 12)

made to work out an effective proration plan for East Texas comparable to that which has been enforced in other flush fields of the Mid-Continent. Should this fail as other plans in the past, it appears certain that the Mid-Continent can look forward to considerable new refinery construction.

The market significance of such a development is already apparent. It would mean no doubt a continuance of low refinery prices until such time as the flush production of the fields has been absorbed. Due to the relatively lower costs, it would work a special hardship on companies operating plants in some of the older refining areas.

Gasoline and Naphtha

The U. S. Motor gasoline price for immediate shipment and delivery over June dropped from 2½ to 2⅜ cents with a few sales the latter part of last week and the first of this week at 2¼ cents. Some resale material was reported available at even lower prices. Some of the Oklahoma low priced sales were made in competition with East Texas refineries.

As explained in these columns last week gasoline from East Texas refineries is becoming more and more a factor in the Mid-Continent market. Some export inquiries were reported in the market the first of the week. If this business materializes it is probable that it will go to East Texas companies due to an advantage of from .125 to .45 cent per gallon in freight rates in shipments to the Texas Gulf Coast.

The 60-62 U. S. Motor which is available from several sources did not command more than one-eighth cent premium over the regular grade and usually not that. The 60-62 400 endpoint grade in fact was available at one-eighth cent premium over 58-60 U. S. Motor. The 390 grade was nominally quoted at 2⅝ to 3 cents and 375 at 2¾ to 3¼ cents. There was little demand for these grades. The 350 and 360 endpoint grades were more active at a low of 2⅞ cents.

Naphthas are still in demand and the low gravity 450 endpoint grades were quoted at a low of 2½ cents the first of the week. The various blended grades were quoted at a low of 2¼ cents in Oklahoma.

Kerosene

Although the demand continues fair, the price trend in kerosene continues downward due to liberal offerings. East Texas refiners and those in adjoining areas operating with East Texas crude can easily take a 10 per cent cut of kerosene in a skimming operation. Some of this kerosene has a gravity of 44 with a low endpoint. All of it is water white and doctor sweet.

This East Texas material has been offered as low as 2 cents basis Group 3. Oklahoma refiners have not quoted that low and the bulk of the movement is at a price range of 2¼ to 2½ cents for the 41-43 water white grade. Gravities up to 46 are quoted. The 44 grade brings one-eighth to one-fourth cent premium over the 41-43 grade.

Fuels

The situation outlined last week in regard to fuels has not changed although two trade authorities expressed the opinion that the spot demand was slightly better. Some high cold test fuel oil sold under 15 cents per barrel and one sale of high cold test Panhandle fuel oil brought 10 cents basis Group 3. Some high cold test fuel oil from East Texas refineries at 10 cents basis Group 3 was also available to buyers.

At the same time some low gravity, low cold test fuel oil sold in Oklahoma as high as 30 cents. Prices vary so widely that published quotations in this issue are confined to the medium and low cold test grades. These prices range from 25 to 50 cents per barrel.

Quotations on gas oils are unchanged. There is little demand for U.G.I. and high cold test material and prices range up from three-quarters cent per gallon. It is predicted that the next month will see considerable U.G.I. buying for storage. Distillate prices are unchanged.

Natural Gasoline

The demand for natural gasoline continues fair and prices are unchanged. Among the manufacturers there is still a hope that prices will improve over the last half of June. Grade A is steady at 2 cents with the more stabilized grades selling at 2¼ and 2⅜ cents. Grade AA was moving at 2⅝ cents and the remaining grades at 2½ cents.

Lubricants

Manufacturers of neutral oils, cylinder stocks and bright stocks have been reducing their prices on several grades over the past two weeks and these reductions have now become general. The 200-3 color, the most popular of the neutral oils, is offered at a price range of 8¾ to 9¼ cents. Similar reductions have been made in other grades including the non-viscous grades which are moving slowly.

The lower posted prices for crude oil are said to be responsible for the willingness on the part of refiners to lower their quotations on steam refined stocks and bright stocks. Most of the bright stocks are being sold over a price range of 12 to 14 cents depending largely on cold test. Steam refined products have been sold as low as 2½ cents. Wax prices are unchanged.

SLOW TRADING BRINGS LOWER COASTAL PRICES

HOUSTON, Tex., June 8.—Continued sluggish trading, coupled with substantial reductions in all crude prices the past week, has resulted in further weakening of Gulf Coast refinery markets. This was reflected in slipping of nearly all products with the possible exception of gas oil, which is of little importance at this time of year.

Postings of Bunker oil were lowered 10 cents at all terminals on the Coast early in the week, following close on cuts on the Atlantic Seaboard. This makes the market 70 cents. Bunker oil was cut 10 cents to 80 cents several months ago to offset numerous concessions which were being offered at that time when several sources were openly selling at substantial quotations under the prevailing market. This stabilized the situation for a short time but steady weakening has been felt lately with more cutting of prices to get business, bringing about the additional posting cut.

Along with the cut in Bunker oil and lowering of crude prices, bulk fuel is decidedly weaker at Coastal refineries. While sellers still are attempting to maintain a minimum quotation of 60 cents for fuel meeting Bunker specifications, there is no question that this is top also. Quotations of 60 to 62½ cents have been held fairly general for several weeks but these have been largely nominal. Increasing quantities are known to be available at 60 cents and buyers report they could shade that figure if they really wanted material.

Pale and red oils at the opening of this week were a shade lower, chiefly a reflection of the lowered crude prices, particularly of Grade A oil. The latter oil, the original Gulf Coast lubricant crude, has been discontinued as a separate grade of oil and placed on a parity in price with Grade B, a lighter oil with a much greater content of the higher fractions. As Grade A oil is below 25 gravity, this oil was cut 26 cents from 70 to 44 cents and now commands the lowest price of any Coastal oil.

Spot gasoline is quoted nominally at 4½ cents but virtually none is being sold at this figure. Contract gasoline, based usually on North Texas prices, is available from 3¾ to 3⅞ cents and this discourages sales on the open market higher than that.

OIL MAN'S CALENDAR

JUNE

10-12—Swampscott, Mass., American Institute of Chemical Engineers.

15-18—Madison, Wis., fourth national oil and gas power meeting, American Society of Mechanical Engineers.

15-19—White Sulphur Springs, W. Va., summer meeting, Society of Automotive Engineers.

18-19—Charleston, W. Va., West Virginia Oil Marketers Association, Daniel Boone Hotel.

22-26—Chicago, annual meeting, American Society for Testing Materials.

29-30—Chicago, National Association of Taxicab Owners.

AUGUST

10—Denver, Colo., Oil States Advisory Committee.

SEPTEMBER

1-3—Cleveland, Ohio, twentieth national aeronautic meeting, Society of Automotive Engineers.

16-18—Atlantic City, N. J., annual meeting, National Petroleum Association, Hotel Traymore.

28-29—Atlantic City, N. J., National Association of Motor Bus Operators, Hotel Ambassador.

OCTOBER

2-3—Houston, Tex., Petroleum Division, American Institute of Mining and Metallurgical Engineers.

12-16—Chicago, National Safety Council.

14-16—Pittsburgh, Pa., Society of Industrial Engineers.

NOVEMBER

10-12—Chicago, twelfth annual meeting, American Petroleum Institute, Stevens Hotel.

16-21—Pittsburgh, Pa., third International Conference on Bituminous Coal, Carnegie Institute.

DECEMBER

7-12—Atlantic City, N. J., Trade Show, Motor and Equipment—National Standard Parts Association.

28-31—Tulsa, Geological Society of America, Mayo Hotel.

TEMPORARY CLOSING APPROVED BY WILBUR

WASHINGTON, D. C., June 8.—The Interior Department has authorized Indian service officials in Oklahoma to permit temporary closing of small oil wells. Letters to Superintendent Landman of the Five Civilized Tribes and Superintendent Murphy of the Osage Reservation were sent out by Commissioner Rhoads, outlining the procedure to be followed.

The superintendents were advised to permit, upon application from the driller, the closing of such small Indian wells as would not be damaged, but their authority was restricted to suspensions of a few months only.

In cases of applications for longer periods, Murphy and Landman were told to secure the consent of the tribal council or individual Indian, respectively, and then refer the matter to Washington for final decision.

Secretary Wilbur and the Indian commissioners have explained they wished to protect the lessees of Indian wells, but felt obligated to safeguard the interests of Indians who depend upon royalties for their living.

As the policy was explained at the Interior Department, it will not involve any wholesale closing of wells, but will be limited to those whose operators may not be able to keep going as long as prices remain at their present level of 35 cents and under.

PRICES CUT DEEPLY EAST OF CALIFORNIA

(Continued from Page 24)

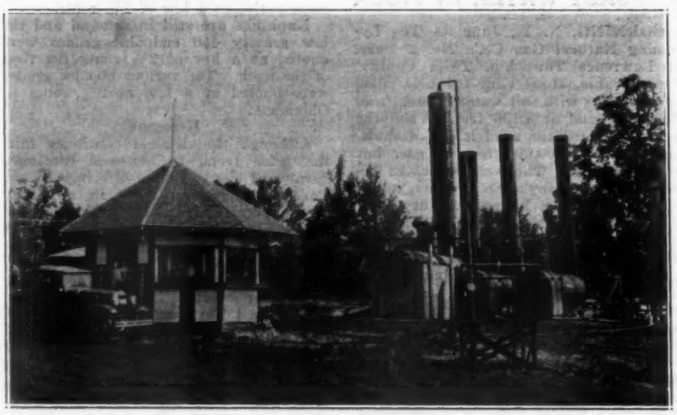
cents; Darst Creek, 37 cents; Pettus, 50 cents; Corsicana heavy, 22 cents; Luling, 22 cents.

The Texas Company on June 2 led in the crude price reductions in the Gulf Coastal fields. Abandoning Grade A as a classification, The Texas Company announced that effective on June 2 it would pay 44 cents for oil below 25 gravity; 45 cents for 25 gravity with 1 cent added for each degree up to 40 and above at 60 cents. On June 3 the Humble Oil & Refining Co., Gulf Pipe Line and Sun Oil Co. announced the abandonment of Grade A classification and adopted The Texas Company prices up to and including 35 gravity at 55 cents, but that they would pay 55 cents for all oil above 35 gravity. The coastal schedule and prices were applied to Refugio light crude, while Refugio heavy was given a flat 44-cent price. Markham crude was reduced to 37 cents and High Island to 40 cents.

On June 2 The Texas Company lowered its prices in North Louisiana and Arkansas in the fields in which oil is purchased on a gravity basis, starting with below 29 cents at 25 cents, with 1 cent added for each degree upward to 40 and above at 37 cents. It announced a 37-cent price for Smackover crude. On June 3 the Gulf Refining Co. adopted The Texas Company schedule including Smackover at 37 cents, but other buyers on the same day, while adopting the gravity schedule, reduced Smackover crude to 25 cents. Calion heavy was posted at 37 cents by the Gulf company, East El Dorado at 25 cents by the Magnolia Petroleum Co.

In the Rocky Mountain fields the Ohio Oil Co. and the Mid-West Refining Co. cut prices in most of the pools in Montana, Wyoming, Colorado and New Mexico, where they buy oil. The southeastern New Mexico fields are now generally regarded as Mid-Continent fields and Lea County crude was cut to 25 cents per barrel by all buyers, and Artesia to 25 cents per barrel by the Continental Oil Co.

FROM THE WELL TO THE CONSUMER



Layout of the Boone Refining Co.'s plant in East Texas, where oil from its nearby well is delivered to the steam boiler still through 2-inch pipe line. The gasoline is sold at the company's own filling station on the highway near Arp, Tex.

Late Fields

(Continued from Page 24)

NE cor. NW SW, Section 36-19-2w, was drilling deeper at 3,200 feet, after failing to find commercial production in the chat.

Olsen and the Shell Petroleum Corp.'s No. 2 Johnson, SE cor. SW NE, Section 36-19-2w, was expecting the Viola lime in the next few feet. It was drilling at 3,414 feet.

Helmerich & Payne and Shell Petroleum Corp.'s No. 2 Koehn, NE cor. SE, Section 12-20-2w, near the discovery chat well in the Ritz-Canton Pool, found a showing of oil in the chat at 2,932-78 feet. After cleaning up a fishing job at 2,978 feet the operators will drill the test to the Viola lime.

The wildcat test of Stanolind Oil & Gas Co. and others, No. 1 Martin, NE cor. SE SE, Section 3-16-3w, Saline County, found the top of the Wilcox sand at 3,485 feet. It was drilling deeper at 3,500 feet and was in sand, with nothing showing.

Field Umpire Pickerell of the Ritz-Canton Pool, announces that the allowable output has been reduced to 6 per cent of the potential. Ritz-Canton's potential now exceeds 100,000 bbls. a day, and is the largest flush producing area in the State. Most of the wells nearing the producing horizon will be governed by the proration agreement that all tests started after March 17 are to be shut in for 30 days after completion.

Phillips Petroleum Co.'s No. 1 Wiles, SE cor. NE, Section 25-19-2w, on the west side of the Ritz-Canton Pool, in McPherson County, has been credited with a potential of 2,464 bbls. a day from the Viola lime.

The largest gas well completed in the Decker Field, in McPherson County, is the McPherson Oil & Gas Co.'s No. 2 Meyers, C NW SE, Section 14-19-2w, which has been completed for 55,000,000 feet of gas a day with a rock pressure of 890 pounds.

Derby Oil Co.'s No. 5 Eastborough, NE cor. SW NE, Section 19-27-2, in the Eastborough Pool, in Sedgwick County, swabbed 22 bbls. of oil an hour from the chat at 2,962-71 feet. It will be put on the pump at once.

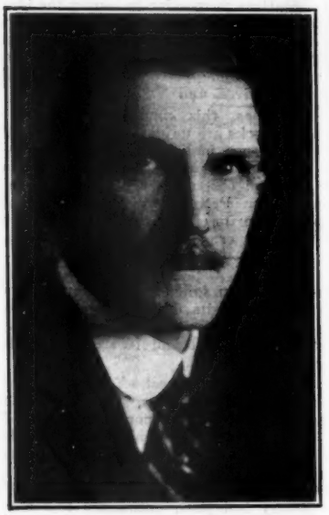
CALIFORNIA

LOS ANGELES, Calif., June 9.—Three new wells have been finished in Kettleman Hills within the past few days and several more are scheduled for completion within the next three weeks. The Kettleman North Dome Association has just finished two new wells No. 2-1P flowing 6,000 bbls. from 8,367 feet, and No. 27-34J doing 6,500 bbls. daily from 8,043 feet. The Standard has finished No. 32-3P flowing 3,800 bbls. from 7,786 feet. Kettleman is now doing approximately 60,000 bbls. daily.

DANIEL M. SACHS HEADS NATIONAL TRANSIT CO.

OIL CITY, Pa., June 9—Daniel M. Sachs, prominent engineer, steel man and pipe line company executive, has been elected president of the National Transit Co., and its subsidiaries, succeeding Lewis E. Lockwonod who died May 9.

Mr. Sachs was born in Hazelton, Pa. and was graduated from Lehigh University in 1902, as a mechanical engineer. He was with the Bethlehem Steel Co. for two years and went to Oil City in 1911



Daniel M. Sachs

to become associated with the Northern Pipe Line Co. He became vice president and general manager of that company and left Oil City in 1918 to accept a similar position with the New York Transit Co. at Binghamton, New York. He held that position until the lines were sold to the Columbia Gas and Electric Corp. recently.

Gordon Brochner of Pittsburgh has been appointed assistant to the president of the National Transit.

RUSSIAN SHIPMENTS LARGE

NEW YORK, June 8.—Russian shipments of refined petroleum products into Great Britain established a new high record during the week ending May 23, totaling 14,880,000 gallons, which was 27.5 per cent of total petroleum imports into England for the week.

Included in the Russian shipments for the week were the following: 9,066,000 gallons of gasoline; 4,950,000 gallons of kerosene; and 865,000 gallons of fuel oil.

The Soviet marketing organization in Great Britain is substantially broadening its operations in Scotland and Ireland, with the construction of numerous new bulk marine terminals as well as additional service stations.

CRUDE OIL PRICE CHANGES

(Continued from Page 118)

was cut to 55 cents by the Ashland Refining Co.

On June 2 the Ohio Oil Co. cut Illinois, Princeton and western Kentucky crudes 25 cents per barrel; Lima, 20 cents; Wooster, Ohio, 26 cents; and Indiana, 15 cents per barrel. The Stoll Oil Refining Co. cut Kentucky crude it purchases to 50 cents effective June 6.

Eastern Canada crude was reduced 25 cents by Imperial Oils, Ltd., making Petrolia $1.55 per barrel, and Oil Springs $1.62 per barrel. Both pools are in Ontario.

All companies that did not on June 1 meet the Oklahoma and Kansas and North Central Texas prices posted by Stanolind Crude Oil Purchasing Co. did so on June 2 or June 3.

ROOTS-CONNERSVILLE-WILBRAHAM
DIVISION OF INTERNATIONAL-STACEY CORPORATION
Michigan Avenue and 14th Street
Connersville, Indiana

20 North Wacker Drive, Chicago, Illinois
235 Montgomery Street, San Francisco, California
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Ross-Meehan Foundries
Manufacturers—
RIVER CLAMPS a Specialty
Williamson Multispeed Winch for Oil Fields
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Electric Steel Castings, Electrically Annealed
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"Meehanite Metal" Castings
Gray Iron Castings
Special Analyses Castings for—
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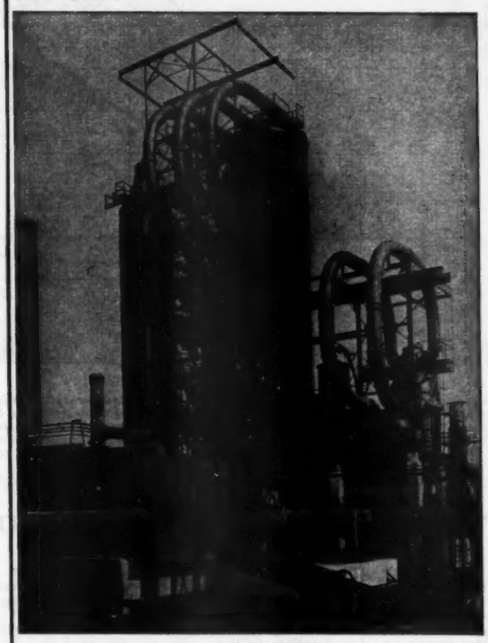
GULF

Modern Methods Make Modern Gulf Products



the largest Atmospheric-Vacuum Still ever built.

Paraffine and Coastal Crudes

Gasoline · Lubricating Oils

Naphtha · Gas · Oils

Wax · Petroleum Coke

Cylinder · Engine · Cordage

GULF REFINING COMPANY

General Sales Offices: PITTSBURGH, PA.

THE HOSE WITHOUT A PEER FOR SAFETY AND DRILLING SPEED

TWO PLUGGED BITS *were encountered on this well. One plug was forced out by pressure, the other had to be removed because pump stalled. Very few lengths of hose stand up under this. The well was successfully completed 23 days later, and hose moved to another location.*

CONSTRUCTION:

Defiance Rotary Hose embodies a new principle in Rotary Hose construction. It combines the strength of metal with the flexibility of fabric, and the toughness of rubber.

The couplings, of special design, are attached by us. They come through with the service and conquer the most difficult conditions underground.

PERFORMANCE:

Many lengths of this hose are working successfully at depths from 7,000 to 9,000 feet, and giving no trouble at all. They stand up under the strain of plugged bits, complete the well, and go on to the next one. They are making thousands of feet of hole, with no interruption on account of the hose. In the most difficult proving grounds in the world, Defiance is giving long and satisfactory service. It is doing every conceivable kind of drilling and standing up on wells where three or four lengths of other hose have failed.

Efficient oil men, who desire to make records for themselves by keeping drilling costs down and at the same time maintain a high factor of safety, should, without delay, write or wire our nearest Branch for information and quotation on Defiance Rotary Hose.

D D TRADE MARK

BRANCHES: Akron · Atlanta · Kansas City
New York · Boston · Philadelphia · Dallas
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OTHER DIAMOND PRODUCTS
for foamite service
DIAMOND RUBBER FIRE HOSE
for drilling and pumping
LYNX BELT (A. P. 1)
for moving fullers earth
DIAMOND CONVEYOR BELTS
for oil stills
X-70 ASBESTOS SHEET PACKING

THE DIAMOND RUBBER COMPANY, INC · AKRON, OHIO

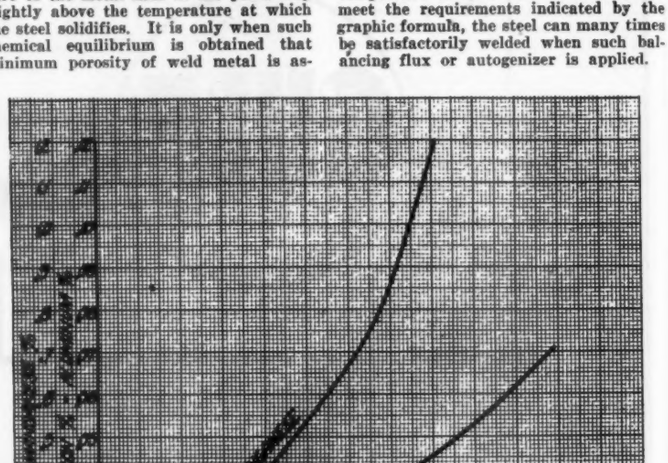
GRAPHIC FORMULA FOR WELDING STEEL

(Continued from Page 88)

aluminum can be specified to insure steel of best welding qualities.

In arc welding steels, produced according to specifications indicated by the Lincoln-Stine equilibrium curve, there is no chemical reaction when the temperature of the metal falls to the point only slightly above the temperature at which the steel solidifies. It is only when such chemical equilibrium is obtained that minimum porosity of weld metal is assured, which in turn means denser, stronger, tougher welds.

In conducting the research Stine also felt that in steels not having the proper proportions of elements for good welding, chemical equilibrium at the proper temperature might be brought about by the use of a corrective flux or autogenizer fused into the steel during the welding process, and during the research developed fluxes or autogenizers for this purpose. Thus, when it is found that the composition of the steel on hand does not meet the requirements indicated by the graphic formula, the steel can many times be satisfactorily welded when such balancing flux or autogenizer is applied.



Curve for determining the analysis of steels best adapted for arc welding. As an example, to ascertain the proper analysis for .18% carbon steel find .18% on the lower line and follow up vertical line to silicon curve, follow horizontal line to left which indicates .019% silicon, then follow up vertical line from .18% carbon to manganese curve then along horizontal line to left which indicates .37% manganese.

TEXAS GROSS PRODUCTION, FIRST QUARTER, 1931

(Continued from Page 107)

Name and address—	Barrels	Value
Kerr, T. P., Corsicana	554.95	461.51
Kleinfelder, B. F., Breckenridge	309.91	278.00
Kimmell & Woofter, Wichita Falls	3,251.03	1,873.63
Keck Investment Co., Los Angeles, Calif.	5,260.04	2,982.44
Kent, G. C., Corsicana	17,630.48	14,784.63
Koenig, Max W., Oakland, Calif.	15,736.49	10,638.41
Keystone Production Co. of Texas, Fort Worth	2,503.78	2,361.23
Knotts, Nona A., Wichita Falls	585.02	460.23
King, R. A., trustee, Wichita Falls	1,202.99	830.06
Kay, A. W., and W. B. Fultz-J. Klsinger farm, Graham	3,379.62	3,051.31
Kirby Petroleum Co., Houston	122,866.79	69,108.67
Kahle, Gracey & Kiver, Dallas	1,613.15	967.53
Kelly, George L., trustee, Wichita Falls	534.18	387.64
Kay, A. W., receiver, Graham	406.77	309.78
Knox, D. M., Graham	4,458.78	3,911.43
Kewanee Oil & Gas Co., Titusville, Pa.	115,620.29	98,471.35
Kimbell, G. T., and John L. Bostic, Burkburnett	3,589.39	3,015.09
Kurz Oil Co., Somerset	406.76	242.59
Kate Bell Oil Co., Dallas	681.06	651.53
Kisk Oil Co., Wichita Falls	163.25	109.21
King & Daniel, Wichita Falls	4,163.68	3,096.19
Keener Oil & Gas Co. of Texas, Tulsa, Okla.	3,596.93	2,682.32
Kaufman, L., San Antonio	317.49	190.94
Kidney-Kamon, et al, Fort Worth	2,852.81	2,700.86
Kendrick, P. S., Albany	2,441.25	2,096.90
Kohlman, Richard, Iowa Park	347.37	242.90
Kolp, C. F., Tyler	13,775.01	10,480.53
Kolp, C. F., et al, Tyler	47,557.27	19,559.29
Keller, J. E., Iowa Park	159.66	95.79
King Royalty Co., Wichita Falls	193,518.25	126,721.29
Kiemcke, George, trustee, Von Ormy	1,347.46	829.55
Killam, O. W., Laredo	292,860.32	204,767.14
Kuhlemeier-Kleiner Oil Co., Cisco	2,266.11	1,874.53
Kleiner, Charles J., Cisco	28,383.54	19,861.89
Kepley Production Co., Laredo	7,766.06	5,857.67
Klatier, Frank E., & Co., Inc., San Antonio	3,166.87	1,600.73
Kemrow Co., Wooster, Ohio	11,915.14	8,438.25
L		
Larcro Gas & Petroleum Co., Refugio (12-31-30)	59,613.50	41,136.76
Laredo Oil Co., Laredo (12-31-30)	708.08	777.79
Lynn Oil Co., Inc., Brenham (12-31-30)	400.00	240.00
Loggie & Arendt Oil Co., Albany	2,122.00	1,718.00
Lockhart & Co., Los Angeles, Calif.	79,098.11	53,893.86
Layne, L. A., Houston	3,549.00	2,805.94
Lewis, J. E., et al, Eastland	893.51	782.73
Lefors Petroleum Co., Lefors	19,716.34	13,216.34
Lackey, W. G., Co., Tulsa, Okla.	2,020.00	1,751.42
Lake Graham Oil Co., Houston	2,437.51	1,857.49

(Continued on Next Page)

TEXAS GROSS PRODUCTION, FIRST QUARTER, 1931

Name and address—	Barrels	Value
Lesh, Kilcrease & Co., Nocona	1,870.98	1,105.09
Lesh & McCall, Nocona	7,810.71	4,660.19
Little, William, Breckenridge	249.98	237.47
Lee & Scott, Inc., Houston	2,570.31	2,056.74
Lee & Wilson, Houston	4,625.59	3,582.18
Landreth Production Corp., Fort Worth	157,970.73	98,618.17
Lido Oil Co. and McGinley Corp., Wichita Falls and Fort Worth	12,107.16	6,457.08
Lewis Production Co., Pittsburgh, Pa.	17,805.51	13,110.91
LaSalle Petroleum Co., Tulsa, Okla.	3,339.80	2,431.00
Lion Oil Refining Co., El Dorado, Ark.	530,701.75	311,942.01
Lloyd Oil Corp., Fort Worth	16,797.05	7,558.67
Lloyd Oil Corp., Fort Worth (12-31-30)	23,646.41	21,518.23
Leck Royalty & Oil Co., Fort Worth	3,083.80	2,971.93
Len-Cook Oil Co., Electra	362.24	247.59
Luling Oil & Gas Co., San Antonio	29,255.03	20,403.78
Lytle, C. F., Mexia	7,372.72	6,143.81
Lake View Oil Co., Sour Lake	9,479.90	6,613.57
Lone Star Gas Co., Dallas	21,405.00	20,217.58
Leiser-Rochmill Production Co., Fort Worth	1,220.66	1,107.37
Linedo Oil Co., Lincoln, Neb.	264.26	182.34
Little Flower Oil Co., St. Louis, Mo.	395.96	311.27
Larcro Gas & Petroleum Co., San Antonio	44,428.70	30,655.80
Lone Star Gasoline Co., Dallas	5,634.00	5,096.01
Letwin & Lippitt, Breckenridge	15,008.50	14,287.07
Leonard, George, Somerset	882.48	551.19
Lebow, C. H., Tulsa, Okla.	1,135.77	910.04
Lawson, Eugene B., Tulsa, Okla.	27,115.09	19,589.74
Lowe, Delaney & Carter, DeLeon	1,839.38	1,314.26
Lee, Homer, Wichita Falls	9,933.44	7,013.97
Long, C. B., et al, Wichita Falls	288.05	201.16
Lowenstein Oil Co., Rockdale	800.22	731.92
Louisiana Oil Refining Corp., Shreveport, La.	235,027.21	195,154.83
Lide-Taylor Oil Co., Inc., Shreveport, La.	122,415.63	57,440.45
Heydrick, L. C., Wichita Falls	10,634.97	7,749.42
MacDermott, W. F., Fort Worth	511.93	454.90
McLean, Marrs, Beaumont	12,920.24	10,042.50
McCrea, L. H., Cisco (4-1-29 to 12-31-30)	730.74	747.11
McHugh, G. E., Graham (12-31-30)	200.96	158.62
McDaniel, D. B., Houston	40,600.85	31,274.90
McAlbert Oil Co., Inc., Houston	144,396.06	113,549.74
McCormick & Noack-Wooten, Rockdale	55.32	33.74
McNamara Oil Co., Beaumont	2,050.72	1,427.71
McMurray, J. L., Cisco	1,673.79	1,623.59
McNallen & Griffin, Tulsa, Okla.	5,372.10	4,783.09
McCrary, E. W., Tulsa, Okla.	4,438.61	3,766.70
McKanna, Inc., Wichita Falls	3,963.45	4,272.65
McDonald & Campbell, Dallas	5,092.65	3,656.67
McLester Oil Co., Eastland	6,877.43	7,091.10
McCarty Oil Co., Wichita Falls	120.00	96.00
McClintock, J. G., Amarillo	4,687.00	2,979.55
McCarty Oil Co., Wichita Falls	58,694.32	48,497.14
McJunkin, Florence T., Tulsa, Okla.	363.26	339.73
McFall, J. M., Wichita Falls	494.98	361.05
McCutchen, C. E., trustee, Wichita Falls	2,865.25	2,399.00
McMurray, Root & Rhodes, Eastland	786.00	734.00
McCutchen, C. E. (Petroleum Producers co-operator), Wichita Falls	180.53	140.67
McBride, W. C., Inc., St. Louis, Mo.	5,063.85	3,347.47
McDaniel Oil Corp., Cisco	4,380.01	4,125.75
McGinley Corp., The, Fort Worth	3,026.79	1,614.27
McCarter, R. C., Rising Star	1,300.40	1,093.92
McChesney, Nancy, Olney	1,194.21	721.43
McIlroy Oil Co., Amarillo	25,970.04	3,966.83
M		
Moore, George N., and Henry Zweifel, receiver for Cosden Oil Co., Fort Worth	190,955.09	128,465.02
Mid-Continent Holding Corp., Wichita Falls (12-31-30)	14,557.75	16,841.50
Mid-Continent Holding Corp., Wichita Falls (10-1-30)	16,044.70	24,082.86
Meredith & Benton & Curt Horrmann, Cisco (12-31-30)	426.95	537.40
Mitchell, Frank A., Wichita Falls (10-1-29 to 12-31-30)	27,934.68	38,994.79
Medio Oil Co., San Antonio	687.28	548.18
Martin Petroleum Co., Humble	2,932.79	2,346.23
Montgomery-Rea-Montgomery, Sedwick	1,032.52	945.87
Major, A. W., Laredo	1,283.55	885.65
Mennis, G. W., estate, Wichita Falls	2,677.58	1,837.09
Martin, N. H., Wichita Falls	8,403.95	5,673.83
Martin & Hamilton, Wichita Falls	2,158.25	1,560.94
May, F. N., Santa Anna (12-31-30)	110.83	102.39
May, F. N., Santa Anna (3-31-31)	98.42	92.64
Mills & Garitty, Corsicana	2,475.74	1,733.00
Minerva Petroleum Co., Minerva	282.88	210.18
Minor Oil Co., Beaumont	8,230.32	5,678.92
Martin, Drake & Jones, Houston	18,256.54	18,967.00
Mount & Lee, Inc., Wichita Falls	1,643.79	1,175.69
Midland Oil Co., Fort Worth	293.51	245.90
Moody Corp., Lewis Fisher & Thomas H. Ball, receiver, Houston	509,046.52	344,200.28
Mid-Texas Petroleum Co., Oklahoma City, Okla.	12,435.09	11,334.93
Mordyan Petroleum Co., Pampa	16,363.81	11,402.22
Mues & MacDermott, Fort Worth	316.18	276.06
Marnet Oil & Gas Co., Tulsa, Okla.	4,442.23	3,839.17
Mid-Continent Petroleum Corp., Tulsa, Okla.	17,208.49	14,006.52
Moss, Urschel & Keys, Dallas	5,248.84	4,384.88
Moss & Urschel, Dallas	11,160.67	9,690.70
Meredith & Gant, Wichita Falls	1,793.21	1,416.69
Menke, John G., Wichita Falls	821.06	633.47
Mills Bennett Production Co., Houston	321,224.26	255,231.98
Midwest & Gulf Co. of Texas, Trust Estate, Tulsa, Okla.	1,512.18	927.83
Medina Oil & Refining Co., Hondo	465.24	558.29
Minntex Oil Corp., Wichita Falls	616.76	414.18
Moore, N. A., Eastland	598.29	532.62
Moran, J. J., et al, Wichita Falls	4,311.06	2,705.18
Mudge Oil Co. of Texas, Pittsburgh, Pa.	200.00	116.00
Macknold Co., San Antonio	210.15	125.46
Mitcham, G. P., Cisco	984.73	816.25
Madison Oil & Gas Co., Electra	2,730.98	2,093.86
Mitchell, Frank A., Wichita Falls (3-31-31)	2,741.97	2,068.45
Mid-Kansas Oil & Gas Co., Findlay, Ohio	3,948,907.78	2,345,206.48
Magnolia Petroleum Co., Dallas	2,188,931.88	1,524,242.26
Maxwell, J. C., Fort Worth	39,679.30	23,166.07
Moss, George, Batson	641.84	442.87
Merrick & Belcher, Wichita Falls	4,443.51	3,680.12
M & V Oil Co., Wichita Falls	2,487.26	1,653.65
Merrick & Goldsmith, Wichita Falls	2,824.70	2,369.72
Merrick, John F., Wichita Falls	258.60	249.51
Morgan, Ray, et al, Fort Worth	702.87	660.97
Mendenhall Oil Co., Cisco	1,037.80	984.89
Meridian Petroleum Corp. of Texas, Tulsa, Okla.	5,234.24	3,996.76
Madden & Hunt, Olney	6,316.24	4,968.72
Magee, R. B., Wichita Falls	1,199.45	745.08
Madden, E. B., Olney	12,262.89	7,367.72
Moran Co., The, Wichita Falls	6,782.24	4,793.25
Meredith, J. D., Moran	2,971.40	2,191.90
Massie, J. H., Wichita Falls	33,757.58	24,302.19
Mark Finston Special Account (old O.P.&G. Co. leases), Tulsa, Okla.	8,484.76	5,877.03
Millikin, L. L., Burkburnett	248.19	169.90
Murchison Oil Co., Dallas	55,102.95	33,519.00
Marts, E. R., et al, Dallas	39,870.98	24,577.43
Mayberry, C. R., Co., Laredo	1,690.53	1,166.46
M-C-H Co. (Ada McLemore, owner), Albany	3,263.06	2,007.69
Medina Oil & Gas Association, San Antonio	83.32	51.94

(Continued on Next Page)

Twisting "SECRETS" out of Steel Wire

Between the jaws of this testing machine, the wire for B & B Drilling Lines is twisted until it snaps. Plain as day, its quality is revealed by the *number* of recorded twists, the *manner* of twisting, the *appearance* of the fracture.

In this torsion test, as in all others, our standard of tolerance is most exacting. That's why oil men say: "B & B Lines are *remarkably* uniform." Try them and see.

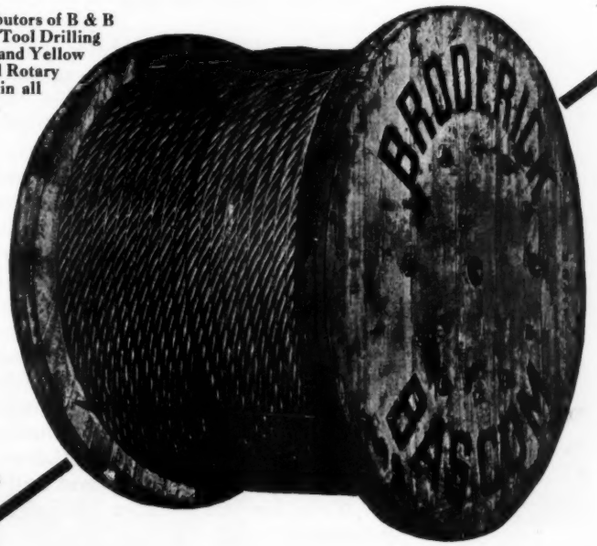
Get Catalog K-2

BRODERICK & BASCOM ROPE CO., ST. LOUIS

New York Houston Portland Seattle

FACTORIES: St. Louis and Seattle

Distributors of B & B Cable Tool Drilling Lines and Yellow Strand Rotary Lines in all fields.



P16R2

BRODERICK & BASCOM DRILLING LINES

PATENTSTEEL, EXTRA STRONG CAST STEEL AND CAST STEEL; ALSO POWERFUL YELLOW STRAND ROTARY LINES

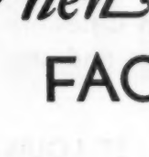
When you replace valves

FACE THE FACTS

It's the ultimate cost of the cure not the immediate price of the prescription in which you should be interested . . . Stainless Steel has proved its value in service.

In valve discs, rings, balls, bushings, seats, and stems, Stainless Steel has demonstrated a trouble-free life that is sometimes as much as 500% greater than that of ordinary steel . . . It is non-corrosive under steam and oil vapors . . . Highly resistant to the wear of sand and scale and to the cutting action of high velocity flows.

Stainless Steel is recommended for petroleum handling equipment because it provides physical and chemical properties not to be found in any other practical metal. It is available in Brinell 150 to 600 and tensile strength 60,000 to 250,000 pounds per square inch. Specify it for Valves, Bolts, Nuts, Tanks, Tubing, and Stills . . . Write for our booklet "Stainless in Industry."



Stainless Steel valves are economical not only because they outwear other types but also because they require very little service.

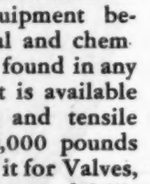
Stainless Steel is amazingly efficient under the combined forces of pressure, temperature and corrosion.

Genuine Stainless Steel is manufactured only under the *patents* of

AMERICAN STAINLESS STEEL COMPANY

Commonwealth Building, Pittsburgh, Pa.

STAINLESS STEEL



Stainless Steel equipment is easy to clean. In machinery its highly polished surface stays bright . . . In tube stills it cuts down the formation of coke.

TEXAS GROSS PRODUCTION, FIRST QUARTER, 1931

Name and address—	Barrels	Value
Merrick & Bristow, Ardmore, Okla.	41,395.21	21,793.46
Merrick & Lamb, Ardmore, Okla.	25,927.39	18,501.99
Moody-Seagraves Producing Co., Houston	683,768.97	623,866.81
Milham Corp. of Texas, Fort Worth	1,396.00	1,020.34
N		
Nimrod Oil Co., Dallas (12-31-30)	19.24	20.59
Nunn-Stubblefield Oil Co., Amarillo (9-30-30)	16,953.24	22,581.71
Nunn-Stubblefield Oil Co., Amarillo (12-31-30)	19,062.87	18,258.72
Nunn-Stubblefield Oil Co., Amarillo (3-31-31)	11,336.36	7,292.61
Neal, Warren P., Brownwood (12-31-30)	94.30	39.93
Newport & Ohio Petroleum Co., Newport, N. Y.	386.70	287.41
Navarro Oil Co., Houston	125,164.17	99,795.75
Newton & Lillie, Shreveport, La.	17,790.05	14,796.52
Noack & Lanning-Phillips & Perry, Rockdale	76.38	63.40
Noack & Lanning-Shelton, Rockdale	155.61	112.90
Noack Oil Co., Rockdale	901.34	777.49
Nash, Windfohr & Perry, Austin	47,213.03	39,037.45
Nash & Windfohr Oil Corp., Graham	44,881.37	39,622.86
Newton-Palmer Oil Co., Rockdale	215.25	192.37
Nutt & Gates, Wichita Falls	1,325.72	1,089.38
Nabob Oil Co., Amarillo	14,278.79	10,207.08
North Fork Oil Co., Amarillo	1,116.59	692.30
Number Nine Oil Corp., Tulsa, Okla.	2,014.22	1,466.50
National Oil Co., San Antonio	585.41	348.90
O		
Owen-Sloan Oil Co., Philadelphia, Pa.	44,395.30	21,820.27
O & A Co., Laredo	1,981.87	1,404.93
Oil Fields Corp. of Arkansas, El Dorado, Ark.	12.00	11.04
Oil Investment Co., Wichita Falls	1,603.71	1,215.88
Oriental Oil Co., Dallas	338.39	276.21
O'Neil, John, Wichita Falls	7,736.94	6,661.50
Olney Oil & Refining Co., Wichita Falls	99.03	82.53
Orange Petroleum Corp., Orangefield	26,094.08	21,178.14
Ohio Somerset Oil Co., The, Cleveland, Ohio	1,083.80	702.57
Oasis Oil Co., Wichita Falls	90.80	66.60
Olean Petroleum Co., Bristow, Okla.	8,851.41	5,841.07
Oklahoma Co. of Texas, Tulsa, Okla.	2,945.36	1,541.73
Oldom, William P., Iowa Park	487.13	320.82
O'Brien, W., Amarillo	470.49	258.39
P		
Pearson Oil Co., San Antonio	45.08	40.57
Pure Oil Co., The, Chicago, Ill.	2,208,259.48	1,741,803.90
Pure Oil Co., The, Chicago, Ill.	576,440.55	446,544.02
Pennowa Oil & Gas Co., Skiatook, Okla.	7,006.22	6,448.10
Piner, R. T., Big Spring	2,484.79	1,661.41
Pansota Oil Co., Amarillo (10-1-30)	2,734.01	2,049.79
Pansota Oil Co., Amarillo (12-31-30)	3,783.93	4,368.93
Pansota Oil Co., Amarillo (3-31-31)	1,890.00	1,147.27
Pitzer & West, Breckenridge (9-30-30)	1,245.72	1,645.22
Pioneer Oil, Gas & Refining Co., Danville, Ill.	877.79	630.94
Panhandle & Santa Fe Railway Co., Wichita, Kans.	4,382.80	2,191.40
Price-Russell & Co., Ranger	3,094.00	2,956.85
Pettit Oil Corp., Trees, La.	1,425.07	1,384.38
Phillips Petroleum Co., Bartlesville, Okla.	235,334.40	137,209.01
Phillips Petroleum Co., Bartlesville, Okla.	94,017.77	86,453.58
Phillips Petroleum Co., Bartlesville, Okla.	922.44	529.56
Phillips Petroleum Co., Bartlesville, Okla.	4,109.08	2,375.68
Phillips Petroleum Co., Bartlesville, Okla.	317,008.32	219,730.77
Phillips Petroleum Co., Bartlesville, Okla.	14,244.05	8,232.88
Phillips Petroleum Co., Bartlesville, Okla.	9,612.29	9,371.46
Phillips Petroleum Co., Bartlesville, Okla.	947.03	919.63
Phillips Petroleum Co., Bartlesville, Okla.	5,841.04	5,396.97
Phillips Petroleum Co., Bartlesville, Okla.	26,237.91	23,700.37
Phillips Petroleum Co., Bartlesville, Okla.	5,153.61	4,776.25
Phillips Petroleum Co., Bartlesville, Okla.	19,813.70	19,249.51
Phillips Petroleum Co., Bartlesville, Okla.	1,024.90	836.99
Phillips Petroleum Co., Bartlesville, Okla.	37,976.98	30,518.23
Phillips Petroleum Co., Bartlesville, Okla.	132,118.41	97,282.36
Phillips Petroleum Co., Bartlesville, Okla.	147,921.68	86,860.08
Phillips Petroleum Co., Bartlesville, Okla.	33,493.34	19,873.08
Phillips Petroleum Co., Bartlesville, Okla.	26,615.80	19,518.46
Phillips Petroleum Co., Bartlesville, Okla.	19,630.73	10,273.34
Phillips Petroleum Co., Bartlesville, Okla.	71,782.13	40,799.43
Pecos Crude Oil Purchasing Co., San Angelo	1,513.52	405.95
Pratt, Thomas H., Brenham (12-31-30)	134.00	80.40
Powell, H. J., trustee, San Antonio (12-31-30)	4,241.61	4,241.61
Pratt, Thomas H., Brenham (3-31-31)	176.33	105.80
Piper, L. E., trustee, Vernon	1,684.10	1,364.41
Permian Oil Co., Eastland	2,979.86	2,939.09
Poor Boy Oil Co., Rockdale	203.73	155.14
Primrose Refining Co., Wichita Falls	20,454.13	13,282.43
Putnam Supply Co. & McGee, Albany	353.42	268.92
Piney Oil & Gas Co., New York	2,339.58	1,225.37
Pollard, W. E. and C. E., Pampa	2,795.61	1,563.88
Producers & Refiners Corp. of Texas, Independence, Kans.	5,056.23	4,523.47
Palmer & Burch, Inc., Wichita Falls	6,120.58	4,544.26
Primrose Oil Co., Sour Lake	1,020.19	816.15
Paraffine Oil Co., The, Houston	14,582.37	10,184.84
Pemeta Oil Co., Fort Worth	3,116.10	2,487.28
Philp Brothers, Beaumont	2,832.29	2,117.42
Perkins & Snider lease, Wichita Falls	4,329.53	3,001.18
Pivoto, M. E., Sour Lake	5,567.73	3,915.03
Plymouth Oil Co., Pittsburgh, Pa.	79,535.04	47,411.19
Producers Oil Co., Tulsa, Okla.	62,029.66	44,730.63
Powell, J. L., estate, Wichita Falls	274.99	201.80
Prairie Oil & Gas Co., Independence, Kans.	656,185.12	448,549.16
Plains Drilling Co., Amarillo	15,072.05	20,558.17
Petroleum Marketing Corp., Houston	77,404.72	27,081.65
Porterfield, R. R., Tyler	1,890.56	1,236.73
Proctor, George, Wichita Falls	16,286.87	13,049.26
Producers Supply & Tool Co., Marietta, Ohio	19,168.14	15,040.54
Putnam Oil Co., Tulsa, Okla.	28,148.44	24,664.09
Peery, Thomas H., Wichita Falls	1,728.06	1,626.87
Pilkerton, F. L., Burkburnett	823.64	534.49
Phillips, J. R., Amarillo	678.01	321.27
Panhandle Refining Co., Wichita Falls	97,667.92	77,535.88
Perkins & Cullum, Wichita Falls	98,814.22	69,806.96
Pois, M., et al, Wichita Falls	3,206.88	2,579.84
Pois, M., trustee, Wichita Falls	114.39	116.93
Pois, Fine & Schultz, Wichita Falls	558.01	415.13
Producers Drilling Co., Wichita Falls	1,630.17	1,204.45
Pursel, Carl, trustee for Darby Lynde Co., Tulsa, Okla.	14,855.82	11,102.81
Pitzer & West, Breckenridge	15,210.42	14,326.55
Penn Oil Co., Dallas	11,605.69	8,303.30
Pace & Ward, Breckenridge	553.48	430.31
Poole, B. O., Batson	1,981.69	1,380.58
Paggi Brothers Oil Co., Beaumont	7,494.40	5,171.12
Paggi, Charles, & Co., Beaumont	457.30	315.53
Peckham, F. W., Stamford	957.00	624.80
Powers Production Co., Houston	2,652.17	1,648.13
Petroleum Producers Co., Wichita Falls	107,421.40	75,571.59
Pomykol, Joe, Jr., Brenham	200.00	130.00
Q		
Quinn, J. W., et al, Eastland	1,654.16	1,606.47
Quincey Oil Co., Vernon	151.49	118.92

(Continued on Next Page)

TEXAS GROSS PRODUCTION, FIRST QUARTER, 1931

R

Name and address—	Barrels	Value
Reinhart, M. J., trustee, Oklahoma City, Okla. (12-31-30)	426.06	468.95
Robert Oil Corp., Breckenridge (12-31-30)	18,221.38	20,201.17
Ross, James F., Laredo (9-30-30)	2,313.35	1,966.34
Ross, James F., Laredo (12-31-30)	2,622.73	2,107.72
Ross Amigos Oil Co., Laredo (9-30-30)	7,826.64	6,652.64
Ross Amigos Oil Co., Laredo (12-31-30)	8,268.11	6,370.22
Ross Segunda Oil Co., Laredo (9-30-30)	347.26	295.17
Ross Segunda Oil Co., Laredo (12-31-30)	361.73	271.30
Richardson & Kelsey, Fort Worth	50,170.49	30,641.68
Red River Oil Co., Tulsa, Okla.	24,409.13	18,742.68
Reinhart, M. J., trustee, Oklahoma City, Okla. (3-31-31)	410.74	367.42
Rockdale Junion Oil Co., Rockdale	153.50	113.33
Randall, W. S., Oklahoma City, Okla.	764.72	603.79
Republic Supply Co., Houston	4,670.20	3,247.98
Reeves, Riley & Reeves, Goldbush	515.97	681.64
Richardson Trust Co. & M. L. Dresser, Markley (12-31-30)	1,246.83	1,134.91
Richardson Trust Co. & M. L. Dresser, Markley (10-1-30)	1,695.85	2,134.43
Ranell Oil Co., Oklahoma City, Okla.	3,592.57	2,091.23
Robinson, Arthur D., Dallas	5,107.61	3,863.03
Ruby Oil Co., Minerva	82.43	51.92
Roberts, H. W., Wichita Falls (12-31-30)	1,621.49	1,311.94
Roberts, H. W., Wichita Falls (9-30-30)	1,776.67	2,540.64
Ramming, R. W., Wichita Falls	683.37	478.72
Ramming, Staley & Ramming, Wichita Falls	542.15	401.18
Ramming, W. F., Wichita Falls	126.93	98.09
Robins, J. W., trustee, Owenwood Pool No. 3, Fort Worth	3,409.90	2,923.10
Ramsel, W. T., Oil Co., Rockdale	1,310.89	1,093.60
Royal Producing Co., Houston	766.68	539.01
Robinson, J. B., Sour Lake	204.74	141.27
Roeser & Pendleton, Inc., Fort Worth	185,773.45	154,640.98
Rio Bravo Oil Co., Houston	376,160.38	316,429.35
Roth & Faurot Oil & Gas Co., Independence, Kans.	203.68	217.94
Roy Long Oil Co., Navasota	1,351.35	1,115.40
Rex Petroleum Corp., Vinton, La.	15,131.37	12,444.10
Reiter-Foster Oil Corp., Tulsa, Okla.	5,173.42	4,174.87
Rowe, J. G., Wichita Falls	1,730.85	1,336.77
Right-of-Way Oil Co., Fort Worth	570.24	473.30
Rentex Oil Co., San Antonio	6,616.24	4,577.68
Reed, Crenshaw & Glass, Nowata, Okla.	8,576.67	5,927.28
Republic Production Co., Houston	390,840.39	283,782.78
Ruyle Farm & Oil Co., Wichita Falls	6,499.93	5,048.11
Rountrees, White & Kemp, Rockdale	322.01	265.82
Regan, J. T., Rising Star	1,884.94	1,640.87
Rutsam & Hunter, Wichita Falls	5,163.11	3,244.29
Ruthada Oil Co., Oklahoma City, Okla.	14,329.66	10,226.25
Reeder & Scarborough, Wichita Falls	3,278.98	2,521.34
Ribble, O. C., South Bend (3-31-31)	261.11	232.20
Ribble, O. C., South Bend (12-31-30)	289.10	322.59
Rathke Oil Co., Wichita Falls	20,862.32	15,174.76
Rochmill, Henry, trustee, Fort Worth	477.82	360.92
Ryan Consolidated Petroleum Corp., Tulsa, Okla.	42,209.80	27,048.99
Riner & Omohundro, Wichita Falls	8,010.15	6,247.65
Riner & Bailey, Wichita Falls	20,198.07	15,464.93
Rush, Anderson & Moor, Dallas	15,979.03	11,650.74
Rancho Oil Co., Fort Worth	4,967.30	3,491.17
Robinson, O. D., Pittsburgh, Pa.	791.18	734.39
Ross, James F., Laredo (3-31-31)	2,275.03	1,569.77
Ross Amigos Oil Co., Laredo (3-31-31)	8,167.65	5,999.63
Reno Oil Co., Sistersville, W. Va.	37,336.20	29,465.48
Randado Oil Corp., Oklahoma City, Okla.	13,704.89	9,456.39
Robert Oil Corp., Breckenridge	76,072.74	40,193.82
Rockwell, J. A., & Co., Warren, Pa.	1,945.58	1,457.87
Rhodes & Highers, Breckenridge	4,869.66	4,272.63
Riggs & Oliphant, Graham	3,798.13	3,168.04
Riggs, E. R., Graham	90,899.77	55,551.92
Root, Rhodes, Gilman & McMurray, Eastland	4,778.00	4,614.00
Reclamation Co., The, Fort Worth	4,524.49	3,932.71
Robertson, R. R., Wichita Falls	1,814.72	1,332.92
Reed, W. M., Breckenridge	1,221.73	966.36
Rock Creek Oil Corp., Amarillo	4,613.51	1,817.72
Russell & Wilson, Wichita Falls	4,396.06	2,475.20
Ruthada Oil Co. for H. L. Sturm, Ardmore, Okla.	4,958.76	3,442.57
Rhodes, Highers & Christie, Breckenridge	166.45	133.41
Root, C. M., Eastland	2,345.00	2,100.00
Root & Fehl, Eastland	2,339.00	1,994.00
Root & Rhodes, Eastland	3,548.00	3,052.00
Refugio Oil Corp., Refugio	6,270.79	4,326.85
Ross Segunda Oil Co., Laredo (3-31-31)	270.57	186.76

S

Swearingen, W. R., et al, San Antonio	1,494.85	1,107.63
Stanolind Oil & Gas Co., Tulsa, Okla.	1,039,509.10	640,892.26
Saxet Oil Co., The, Houston	313,528.26	248,410.09
Schoolfield, R. E., Wichita Falls	197.96	138.71
Swearingen Oil Co., San Antonio	2,868.76	2,096.58
Stansylvania Oil & Gas Co., Amarillo	3,706.58	2,133.46
Smith & Ash, Wichita Falls	9,731.75	6,393.28
Shappell Oil Co., Wichita Falls	42,123.84	32,722.45
Smith, R. E., Houston (12-31-30)	7,005.64	6,269.23
Smith Salvage Co., Houston (12-31-30)	1,809.48	1,809.48
Straughan & Texanneti Oil Co., Mertzon (12-31-30)	1,828.96	1,873.35
Spencer, H. E., trustee, St. Louis, Mo.	829.15	808.37
Shallow Sand Oil Co., Fort Worth (12-31-30)	217.72	225.17
Swanner, John L., Wichita Falls	1,308.26	978.83
Smith & Bynum, Amarillo	570.69	439.37
Smith, Mrs. James L., Amarillo	2,793.23	1,752.28
Smith, McIntosh & Thomas (Coulter lease), Cameron	962.03	795.68
Stratton, Ed F., Pioneer	262.25	201.51
Simmons, T. K., Tulsa, Okla.	1,137.66	936.22
Shankle Newton Oil & Gas Co., Inc., Laredo	70,136.50	49,079.00
Simpson Fell Oil Co. et al, Ardmore, Okla.	8,356.40	5,833.39
Starcke, Max, receiver, Cause A-66, Seguin	14,278.01	11,945.32
Supreme Oil Co., Orange	1,344.40	1,075.52
Stelsky, Joe, & Hefley, Rockdale	262.71	216.21
Southern Drilling & Production Co., Bay City	11,601.47	10,046.86
South Oil Co., The, Rosston, Ark. (3-31-31)	452.16	421.44
South Oil Co., The, Rosston Ark. (12-31-30)	450.67	513.66
Summitt Oil & Refining Co., Amarillo	147.33	95.76
Stein, H., Ranger	166.26	152.42
Staley, J. A., Wichita Falls	2,669.64	2,256.23
Sentinal Petroleum Corp., Chicago, Ill. (12-31-30)	77.94	83.19
Scott, W. M., Wichita Falls	2,069.32	1,188.18
Sheffield Oil Co., Houston	4,809.07	3,847.26
Smith, McIntosh & Thomas (Henry lease), Cameron	438.49	353.87
Shattuck, Mrs. Nellie S., Dallas	2,468.45	2,155.95
Skinner, E. W., Oil Co., Saratoga	4,087.14	2,773.05
Smith, E. L., Oil Co., Inc., Mexia	118,571.07	89,486.73
Star Drilling Co., Wichita Falls	14,693.55	12,114.20
Saratoga Oil Co., Wichita Falls	522.35	451.67
Storey Friebele Duffey Oil Co., Winston-Salem, N. C.	4,013.99	2,317.47
Storey Friebele-Duffey Oil Co., Winston-Salem, N. C.	20,804.01	11,491.02
Schaffner, E. N., Cross Plains	342.28	315.45
Sircovich, A., and Mrs. F. M. Thomas, Houston	542.29	307.02
Stella Oil Co., Beaumont	11,357.02	9,085.62
Stovall, E. C., & Son, Graham	2,603.00	2,587.48
Sinclair Oil & Gas Co., Houston	206,880.00	164,549.68
Standard Oil Land & Leasing Co., Electra	141.88	99.13
Staniforth, M., Wichita Falls	2,834.54	2,647.62
Smith, Levi, et al, Texon	8,641.85	8,016.21
South Shore Oil Co., Houston	3,980.68	3,714.49
Selby Oil & Gas Co., Tulsa, Okla.	4,922.05	4,854.00

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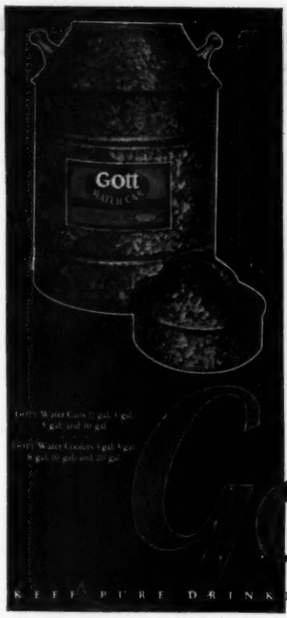

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TEXAS GROSS PRODUCTION, FIRST QUARTER, 1931

Name and address—	Barrels	Value
South Texas Petroleum Co., Houston	99,064.90	101,368.98
Simms Oil Co., Dallas	801,166.40	493,846.93
Scarborough, W. A., Burkburnett	1,485.93	1,078.73
Simpson, O. H., Fort Worth	1,202.26	788.59
Schlaffke & Blair, Electra	11,523.65	9,157.07
Schlaffke, Edwards, Electra	85.63	81.34
Schermerhorn Oil Co., Tulsa, Okla.	122,136.09	62,826.59
Salado Oil Co., San Antonio	1,418.11	1,034.53
Straughan & Texannati Oil Co., Mertzon	1,842.01	1,211.32
Sinclair Oil & Gas Co., Tulsa, Okla.	196,552.70	111,766.70
Shell Petroleum Corp., St. Louis, Mo.	3,545,257.04	2,580,968.83
Summerfield Oil Co., Tulsa, Okla.	144.31	105.91
Sheldon, C. P., Electra	5,394.97	3,868.46
Snowden & McSweeney Co., New York	41,430.46	35,045.23
Spencer, H. H., & Co., Burkburnett	270.19	192.49
Stidham & Thrasher, Electra (9-30-30 and 12-31-30)	1,549.35	1,259.18
Stidham & Thrasher, Electra (3-31-31)	635.10	437.10
Sessions, I. P., Rockdale	352.44	286.41
Syndicate Oil Corp., Rochester, N. Y.	402.49	381.45
Sipe Springs Oil Co., Tulsa, Okla.	4,397.32	3,870.10
Southern Crude Oil Purchasing Co., Fort Worth	1,482,128.16	862,071.31
Slicker, Homer, Cisco	810.74	688.55
Sand Creek Oil Discovery, Amarillo	1,048.30	628.98
Speed, C. D., Corsicana	172.87	145.16
Somerset Oil Co., San Antonio	835.48	539.91
Somerset Crude Oil & Refining Co., Somerset	2,375.99	1,548.79
Southern Petroleum Exploration, Inc., Sistersville, W. Va.	18,918.52	12,527.84
Sedwick & Webb, Albany	618.75	502.52
Sherman Oil & Gas Co., Sherman	850.00	467.65
Smith, W. B., trustee, Eastland	331.26	270.04
Schermerhorn-Winton Co., Tulsa, Okla.	61,162.88	35,437.84
States Oil Corp., Eastland	41,642.65	37,900.97
Shasta Oil Co., Wichita Falls	191.35	130.70
Sink, Joel, Corsicana	191.00	173.00
Smith & McDonald, Electra	924.09	665.33
Smith & McDonald, Electra	12,401.66	7,596.62
Sedwick Oil Co., Tulsa, Okla.	8,286.84	7,017.78
Skia-Tex Petroleum Co., Amarillo	10,328.39	6,892.63
S R & C Oil Corp., San Antonio	128,762.54	93,223.45
Sulock Oil Co., Amarillo	3,366.27	3,847.16
Spencer, W. E., trustee, St. Louis, Mo.	731.72	609.31
Stroube & Stroube, Corsicana	55,784.87	41,593.73
Southern Petroleum Exploration, Inc., Sistersville, W. Va.	8,509.24	5,634.82
Schulz & Weaver, Wichita Falls	7,430.78	4,207.02
Sheldon, W. J., Electra	2,511.66	1,949.93
Skelly Oil Co., Tulsa, Okla.	564,640.53	349,028.89
Sandefer-Atkinson-Dancil Oil Corp., Breckenridge	3,110.02	3,143.47
Superior Oil Producing Co., Tulsa, Okla.	103.90	87.03
Stekoll, Harry, Tulsa, Okla.	17,210.13	11,173.63
Seaboard Oil & Gas Co. of Texas, Wichita Falls	23,373.47	19,451.45
Sullivan, M. J., Kansas City, Mo.	244.49	183.11
Sun Oil Co., Dallas	1,574,591.81	1,226,272.78
St. Marys Oil & Gas Co., St. Marys, W. Va.	40,942.96	29,992.95
Southeast Royalty Co., Wichita Falls	4,602.81	3,436.01
Shaw Oil Co., Wichita Falls	91,042.88	40,254.99
Sequoia Oil Co., Fort Worth	36,853.41	23,954.71
Sequoia Oil Co., Fort Worth	1,474.96	958.72
Saigh, N. A., San Antonio	880.34	653.57
Southern Production Co., Rockdale	6,481.11	4,038.78
Stock, H. I., Cisco	2,171.58	1,898.20
Slick-Seeligson, Inc., Oklahoma City, Okla.	19,402.80	20,953.46
S & W Oil Co., Amarillo	5,069.75	213.80
Sunray Oil Co., Tulsa, Okla.	105,578.84	50,719.89
Shamrock Oil & Gas Co., Amarillo	106,796.23	59,103.91
Sprague Oil Co., Ardmore, Okla.	9,512.25	4,993.01
Seybert Brothers, Mooringsport, La.	1,921.75	1,874.17
Southern Oil & Production Co., Fort Worth	830.45	817.10
Shertzer Brothers, Dewey, Okla.	4,186.07	3,922.56
Stepp & Keister, Coleman	210.00	147.00
Shaw, T. G., Oil Corp., Fort Worth	31,584.96	24,738.04
T		
Turman, L. C. (W. E. Allen, receiver), Fort Worth	153,912.78	112,560.11
Trimount Petroleum Co., Shreveport, La.	5,137.92	4,935.13
Talbot & Markle, Houston	1,147.35	819.99
Triangle Oil & Gas Co., Rockdale	628.12	472.85
Tannehill, L. B., Albany	17,067.44	15,156.36
Texas Fidelity Oil Corp., Fort Worth	5,161.83	4,883.16
Treat, E. M., Oil & Gas Co., Pittsburgh, Pa.	1,042.55	984.10
Teddlie, J. E., Liberty	3,406.41	2,725.05
Taylor-Sibley Syndicate, Dallas	1,902.27	1,515.14
Thomas, J. A., Burkburnett	1,329.14	994.08
Traylor-Rutherford Oil Corp., Refugio	54,094.00	37,824.17
Texas American Syndicate, Dallas	14,463.61	11,455.64
Thaxton, Nannie S., executrix, Austin	310.14	264.98
Teatsorth, L., et al, Eastland	1,247.51	1,175.68
Trinity Production Co., Wichita Falls	233.36	174.56
Taconian Oil Co., Wichita Falls	267,782.40	167,704.90
Triangle Petroleum Co., Inc., Fort Worth	611.46	449.98
Tilton, Elvin et al, Houston	17,058.31	11,770.63
Trevino Oil Corp., Laredo	20,929.07	14,786.49
Taylor-Link Oil Co., Houston	52,832.66	31,764.22
Texas Petroleum Co., San Antonio	32,597.24	19,937.56
Tex Cal Oil Co., Brownwood	1,882.70	1,371.28
Tidwell, R. V., trustee, Graham	4,034.26	3,643.85
Tucker, Art, Graham	175.00	105.00
Timblin, W. E., Wichita Falls	218.04	181.06
Texas Pacific Coal & Oil Co., Thurber	227,324.63	174,510.57
Texas Pacific Coal & Oil Co., Thurber	93,349.05	35,883.51
Travelers Oil Co., Amarillo	4,528.03	2,902.04
Texas Petroleum Development Co., Cameron	3,500.45	2,870.93
Texon Oil & Land Co. of Texas, Fort Worth	63,215.85	36,417.97
Texas Unity Oil Co., Houston	444.59	413.43
Texas Consolidated Oil Co., San Francisco, Calif.	11,251.14	11,445.11
Thomas, J. Elmer, Fort Worth	8.80	8.89
Thompson, J. E., Humble	597.00	477.65
Thomasson, E. M., & Co., Inc., Denver, Colo.	348.88	328.12
Tripplehorn, J. W., and D. R., Fort Worth	2,248.69	1,988.47
Towns, M. K., Luling	10,930.97	8,921.12
Tegler, F. E., San Antonio	271.43	321.81
Turman, L. C. (W. E. Allen, receiver), Fort Worth	29,601.87	18,776.46
Tillman, J. W., Humble (3-31-31)	193.56	136.44
Tillman, J. W., Humble (12-31-30)	94.43	71.57
Tidwell, H. L., trustee, Graham	846.16	748.58
Tripplehorn, D. R., Pampa	4,817.12	2,875.27
Texas American Syndicate, Dallas	13,391.00	8,230.36
The Texas Company, Houston	2,974,574.96	2,375,994.93
Timms-Dietsch Oil Corp., Amarillo	2,367.02	1,528.48
Timms, L. W., Oil Corp., Amarillo	1,998.22	1,314.50
Theis Oil Co., Sour Lake	2,717.29	2,001.25
Tucker Oil Co., Wichita Falls	76,347.62	52,862.22
Turman Oil Co., Tulsa, Okla.	24,087.48	19,645.37
Tholl Oil Co., Beaumont	2,881.62	2,496.05
Texas Gas Co., Houston	413.75	285.49
Teel Production Co., Breckenridge	1,795.50	718.20
Timms-Fogarty Oil Corp., Amarillo	186.16	94.94
Timms-Robinson Oil Corp., Amarillo	755.17	513.51
Tidal Oil Co., Tulsa, Okla.	192,946.37	109,920.46
U		
Unice & Carpenter, Houston	1,976.26	1,765.26
Underwood Drilling Co., Wichita Falls (Erwin lease)	712.42	516.91
Underwood Drilling Co., Wichita Falls (Perkins lease)	2,284.43	1,703.93

(Continued on Next Page)

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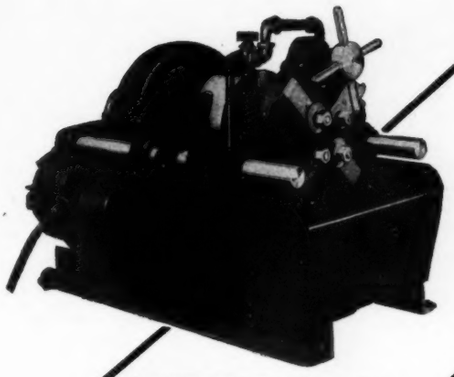
TEXAS GROSS PRODUCTION, FIRST QUARTER, 1931

Name and address—	Barrels	Value
Underwood Drilling Co., Wichita Falls (Ward A lease)	2,263.63	1,758.18
Underwood Drilling Co., Wichita Falls (Underwood & Campbell lease)	628.89	496.24
Underwood Drilling Co., Wichita Falls (U-C-Ward lease)	1,174.71	976.97
Union Oil Co. of Nevada, Abilene	828.26	505.24
United Oil Corp., Wichita Falls	6,884.01	4,749.21
University Lease, Section 24, San Angelo	5,649.27	3,282.41
United Petroleum Co., Brownwood	162.03	121.92
Urban, et al, Ranger	145.51	142.60
Unity Oil Co., Beaumont	13,638.00	10,838.00
Union Oil & Mining Co., Tulsa, Okla.	5,298.69	4,424.40
Ungren-Frazier, Abilene (9-30-30)	2,760.00	3,787.97
Ungren-Frazier, Abilene (12-31-30)	2,069.90	2,327.54
Ungren-Frazier, Abilene (3-31-31)	1,887.44	1,685.90
Ungren-Frazier, Abilene (6-30-30)	2,926.50	4,070.58
United Petroleum Co., Brownwood (4-1-30 to 12-31-30)	589.48	681.58
United Producers Co., Wichita Falls	32,855.32	25,762.28
Union Production Co., Rockdale	2,293.83	1,943.04
Upland Oil Co., et al, Pampa	4,293.58	2,849.75
United Production Corp., Houston	934,575.16	839,836.79
V		
Vincent, A. G., receiver, Waskom (12-31-30)	149.20	187.25
Vacuum Oil Co., Houston	27,852.12	24,754.73
Valerio, Inc., San Antonio	411.47	277.67
Virginia Oil Association, Inc., Fort Worth	2,381.18	1,868.86
Vigil Oil & Gas Co., Wichita Falls	10,091.94	6,056.86
Van Wormer, F. E., Wichita Falls	1,235.83	820.28
Venmex Oil Co. of Texas, Wichita Falls	37,104.01	32,278.70
Ventura Oil Co., Wichita Falls	31,141.25	13,178.35
Van Cleave Trust, Baltimore, Md.	236.29	154.75
Vitek, Paul, trustee, Fort Worth	16,609.28	10,549.69
W		
Warner Oil Co., Pampa (12-31-30)	.....	3,318.54
Winrod Oil Co., Amarillo (9-30-30)	1,373.14	1,785.08
Winrod Oil Co., Amarillo (12-31-30)	1,598.66	1,595.64
Winrod Oil Co., Amarillo (3-31-31)	624.60	384.58
Walker, Hall, Ranger	3,441.55	4,673.72
Waco Oil Co., Waco (1-1-30 to 1-31-31)	837.00	808.24
Williams & Williams, Amarillo (12-31-30)	831.84	577.65
Warner Oil Co., Amarillo	6,648.48	6,630.06
Wootten & Reed, et al, Graham	2,126.34	1,594.75
Woods & Bennett, Humble	5,380.42	4,408.57
Wilson Drilling Co., Wichita Falls	10,530.76	7,999.56
Waggoner, W. T., estate, Fort Worth	1,463.00	1,045.37
Witcher, Annie L., guardian, Wichita Falls	3,107.77	2,460.14
Wilder, Jack H., Rice	363.31	328.31
Wright, H. L., receiver, Mirando City	17,013.92	11,868.35
Why Not Oil Co., Mexia	2,620.17	2,302.95
Wieler, J. G., et al, Cross Plains	915.29	899.14
Worth Petroleum Co., Fort Worth	5,149.47	4,602.08
Waggoner, W. T., estate, Fort Worth (12-31-30)	2,065.74	2,156.88
Webb Oil Co., Humble	3,826.39	3,123.77
Waggoner Refining Co., Electra (12-31-30)	169,640.36	173,569.57
Winch & Henne, Laredo	661.42	483.20
Wahpoo Oil Co., Rockdale	771.69	610.24
Worth Petroleum Co. and George Callihan, Fort Worth	403.34	290.76
West, Mrs. Bessie M., Houston	1,711.37	1,369.10
Wilson, W. I., Electra	1,007.54	778.77
Wolfe, A. T., Wichita Falls	4,715.88	3,666.15
Worth Oil Co., Wichita Falls	3,383.13	1,881.52
Woodburn Oil Corp., Dallas	2,776.24	2,223.16
West Production Co., Houston	23,920.42	21,845.67
Walton, Blair & Schlaffke, Electra	3,774.84	3,005.26
Wood, Benton, Lesh & McCall, Nocona	3,578.45	2,102.56
West, J. H., Lemon Grove, Calif.	6,500.50	4,978.81
Woods, C. D., and C. C., Ranger	520.54	431.80
Woody, W. C., Wichita Falls	1,728.06	1,626.87
Wilson-Broach Co., Beaumont	10,643.23	7,406.44
Washoma Petroleum Co., Enid, Okla.	3,676.60	1,899.98
Wheelock & Collins, Corsicana	6,157.31	5,703.64
Weekley Oil Corp., Fort Worth	30,365.00	17,215.21
Woodruff Development Co., Inc., Cleveland, Ohio	814.00	587.84
Wise & Porterfield, Graham	2,188.37	1,332.32
Webb, J. R., and J. H. Bryant, Corsicana	173.68	81.63
Webb, J. R., Corsicana	175.82	136.29
Webb, Luther, receiver Cosden "D" Lease, Vernon	7,563.61	5,913.92
Webb, Luther, receiver Waggoner "P" Lease, Vernon	12,481.32	8,505.45
Webb, Luther, Vernon	2,551.79	1,799.65
Warner Oil Co., Scottsbluff, Neb.	5,040.62	3,548.17
Woods, E. D., and C. C., Ranger	132.38	135.84
Wills Oil Co., Rockdale	831.22	683.38
White & Duncan, Wichita Falls	5,302.90	4,148.79
Wilbarger Oil Co., Wichita Falls	1,042.50	694.82
Wichita Production Co., Wichita Falls	8,707.08	6,900.75
World Oil Co., Inc., Fort Worth	7,175.46	3,721.84
Williams, J. H., Somerset	276.30	171.72
Wilcox, H. F., Oil & Gas Co., Tulsa, Okla.	222,728.30	156,952.73
Waggoner Refining Co., Inc., Electra	84,842.10	64,518.89
West Texas Petroleum Corp., San Angelo	25,703.75	16,448.89
Westheimer & Daube, Ardmore, Okla.	26,370.02	15,089.30
Watchorn, Robert, Oklahoma City, Okla.		
White, Lee O., Pecos (3-31-31)	13,637.20	9,821.75
White, Lee O., Pecos (12-31-30)	13,816.25	11,980.51
Warner-Quinlan Co. of Texas, Houston	184,761.54	124,555.16
White, James H., Wichita Falls	3,829.70	2,619.05
Wolf, D. L., Olney	4,248.03	2,503.92
Welch, Charles (Margaret Oil Co.), Albany	590.00	454.30
Watts, C. D., Moran	623.91	398.65
Whitfield, B. V., Oklahoma City, Okla.	173.91	186.03
Wo-Mac Oil Co., Wichita Falls	4,457.51	3,570.76
Westbrook, R. A., production account, Fort Worth	20,958.40	12,760.63
Westbrook Oil Corp., operating account, Fort Worth	61,509.42	38,155.46
Wallace & Davis, Minerva	442.14	363.48
Wallace & Emerick, Minerva	253.64	179.21
Woodley Petroleum Co., Shreveport, La.	42,694.84	22,044.41
Wise & Jackson, Sapulpa, Okla.	3,629.38	2,465.09
Wills, O. C., Burkburnett	1,618.76	1,123.91
West, C. K., Breckenridge	1,862.32	1,668.62
Weiler, H. J., Wichita Falls	245.57	138.18
Waggoner, E. P., and C. F. Kolp, Tyler	2,900.79	2,145.54
Weaver & Pois, Wichita Falls	1,896.96	1,446.74
Wentz, L. H., oil division, Ponca City, Okla.	2,695.51	1,698.17
Wallace, Dr. Charles William and wife, Wichita Falls	40,768.95	32,538.99
Williams, Mrs. Cora B., Dallas	3,063.12	2,865.62
Witherspoon Oil Co. and C. L. Witherspoon, San Antonio	26,020.61	17,521.13
Whaley Co., Inc., Fort Worth	170.02	327.80
Wilson, Lee, estate, Wichita Falls	3,587.86	2,467.00
Witcher, W. C., et al, Wichita Falls	333.76	269.23
Whitehill Oil Corp., Tulsa, Okla.	3,221.56	2,574.66
Wilkins, L. A., Burkburnett	4,781.00	3,585.75
Weldon Oil Co., Saratoga	6,679.20	5,683.86
Ward Oil Corp., Ardmore, Okla.	67,477.33	33,480.42
Waco Oil Co., Waco	168.50	117.32
Y		
Young, Crothers & Alexander, Inc., Fort Worth	13,580.79	7,901.74
Yonkers, F. G., Ranger (9-1929 to 12-31-30)	1,633.21	1,357.51
Yount Lee Oil Co., Beaumont	1,252,422.74	974,675.16
Yingling, S. C. (for Southern Oil Corp.), Winfield, Kans.	14,952.08	5,003.01
Z		
Zadie Belle Oil Co., Mineral Wells	415.72	339.06



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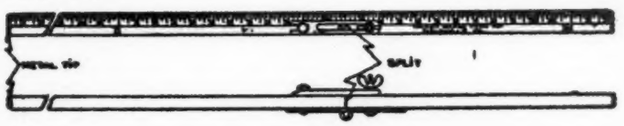

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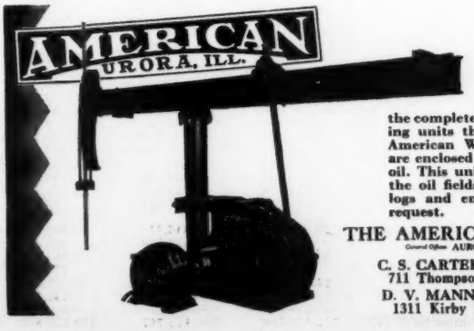

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Oklahoma-Kansas and Eastern Pipe Line Report

OKLAHOMA-KANSAS

Pipe Line Statement for April Runs

Company—	Month bbls.	Dly av. bbls.
Prairie P. L. Co.*	924,000	30,800
Gulf P. L. Co.	1,391,156	46,372
Texas P. L. Co.	641,879	21,396
Empire P. L. Co.	2,312,259	77,075
Magnolia P. L. Co.	1,598,556	53,285
Cosden P. L. Co.	653,096	21,770
Stanolind P. L. Co.	3,340,000	111,333
Oklahoma P. L. Co.	2,159,671	71,989
Other lines*	6,960,000	232,000
Total April	19,980,617	666,020
Total March	19,803,129	638,810
Difference	177,488	27,210

Shipments

Prairie P. L. Co.†	2,324,661	77,489
Gulf P. L. Co.	1,497,417	49,914
Texas P. L. Co.	1,432,493	47,750
Empire P. L. Co.	2,292,164	76,405
Magnolia P. L. Co.	1,801,601	60,053
Cosden P. L. Co.	773,783	25,793
Stanolind P. L. Co.†	3,641,374	121,379
Oklahoma P. L. Co.	2,124,819	70,827
Other lines	7,140,000	238,000
Total April	23,028,312	767,610
Total March	21,762,925	702,030
Difference	1,265,387	65,580

Stocks

Prairie O. & G. Co.*	37,325,000
Gulf P. L. and Gypsy Oil Co.	8,634,325
The Texas Company	5,553,096
Empire P. L. Co.	5,425,148
Mid-Continent Petroleum Co.	3,670,612
Stanolind Crude Oil Pur. Co.*	13,300,000
Magnolia Petroleum Co.	6,167,301
Oklahoma P. L. Co.	2,590,601
Carter Oil Co.	3,768,225
Other lines*	31,139,000
Total April	115,563,308
Total March	117,204,938
Difference	1,641,630

*Estimated. †Prairie and Stanolind shipments include Texas crude oil.

EASTERN PIPE LINE REPORT FOR APRIL

Runs from Wells

In the following table will be found the regular receipts from wells by various pipe lines in New York, Pennsylvania, West Virginia, Ohio, Kentucky, Illinois, Indiana and Michigan for March and April:

	Mar., '31	Apr., '31
Nat. Transit	137,918.13	142,938.57
S W Pa. P. L.	73,145.44	75,998.00
Eureka P. L.	294,372.99	294,284.07
Buckeye P. L. (Macksburg)	311,712.85	300,478.22
Buckeye P. L. (Cleveland)	11,769.49	11,193.35
Buckeye P. L. (Lima, etc.)	79,000.44	78,452.79
Indiana P. L.	3,199.99	2,975.41
Cumberland P. L.	168,106.26	166,133.49
N. Y. Transit	28,392.73	28,562.30
Tide Water P. L.	24,005.40	27,008.88
Pure Oil	212,358.30	195,221.33
Stoll Oil Refining	33,191.99	
Bradford Transit	307,597.03	321,147.01
Total	1,684,271.08	1,647,436.59
Daily average	54,331.32	54,914.55

Petroleum Deliveries

The following tables exhibit the shipments or regular deliveries of various pipe lines in New York, Pennsylvania, West Virginia, Ohio, Kentucky and Indiana for March and Apru:

	Mar., '31	Apr., '31
Nat. Transit	545,039.04	480,757.16
S W Pa. P. L.	423,661.54	386,704.21
Eureka P. L.	328,329.66	300,604.46
Buckeye P. L. (Macksburg)	365,351.57	230,321.29
Buckeye P. L. (Cleveland)	2,440.39	2,198.31
Buckeye P. L. (Lima, etc.)	1,601,858.90	1,677,478.11
Indiana P. L.	737,337.17	995,376.65
Cumberland P. L.	110,949.67	105,359.29
Southern P. L.	79,090.42	20,351.93
N. Y. Transit	187,287.69	174,908.27
Northern P. L.	177,499.13	165,692.77
Tide Water P. L.	362,962.53	451,375.06
Pure Oil Co.	246,505.63	228,993.49
Bradford Transit	341,249.76	324,367.08
Tuscarora	443,677.56	232,195.69
East Gulf Oil	1,674.23	3,094.01
Total	5,874,764.79	5,743,508.77
Daily average	189,508.54	191,450.29

Gross Stocks

The gross stocks held by various pipe lines in the oil-producing section of New York, Pennsylvania, West Virginia, Ohio, Indiana and Kentucky and Indiana at the close of March and April:

	Mar., '31	Apr., '31
Nat. Transit	745,112.23	790,741.10
S. W. Pa. P. L.	369,482.29	538,731.14
Eureka P. L.	1,819,344.51	1,762,107.52
Buckeye P. L. (Macksburg)	565,767.95	513,877.24
Buckeye P. L. (Cleveland)	49,352.24	46,073.83
Buckeye P. L. (Lima, etc.)	3,619,980.13	3,730,603.33
Indiana P. L.	611,627.34	603,583.09
Cumberland P. L.	652,425.69	659,658.19
Southern P. L.	270,576.36	312,817.70
N. Y. Transit	148,013.40	109,007.83
Northern P. L.	343,330.93	291,059.44
Tide Water P. L.	1,030,157.40	900,197.73
Pure Oil	625,831.52	604,079.70
Tuscarora	13,347.56	13,173.30
Bradford Transit	143,165.00	164,714.43
East Gulf Oil	4,647.01	4,071.47
Total	11,012,162.56	11,044,487.59
Decrease	494,327.43	
Increase		32,325.03

Grades of Oil

The following table shows the amount of the different grades of oil held by the Eastern pipe lines at the close of March and April, showing gross stocks of the above fields:

	Mar., '31	Apr., '31
Pennsylvania	3,847,629.68	3,966,991.51
Lima	791,559.81	809,789.81
Kentucky	667,373.51	674,030.47
Mid-Continent	5,090,403.22	4,984,054.76
Illinois		14,978.53
Michigan	615,196.34	592,642.76
Total	11,012,162.56	11,044,487.59

Daily Average Runs

The following table shows the daily average runs of the Pennsylvania, Lima and Kentucky oil fields for the past four years:

	1928	1929	1930	1931
Jan.	52,904	51,749	75,907	53,939
Feb.	57,002	51,833	79,256	55,163
Mar.	57,435	54,252	76,688	54,331
Apr.	56,813	53,444	84,536	54,914
May	52,007	59,902	80,548	
June	53,230	58,838	75,430	
July	57,144	56,087	68,921	
Aug.	57,745	56,087	54,291	
Sept.	53,487	57,315	56,595	
Oct.	53,100	76,093	58,179	
Nov.	52,865	74,831	52,332	
Dec.	52,035	74,561	53,999	

Daily Average Shipments

The following table gives daily average shipments from the Pennsylvania, Lima and other fields for the past four years:

	1928	1929	1930	1931
Jan.	146,465	165,721	217,623	175,869
Feb.	167,388	158,287	224,355	183,494
Mar.	158,883	161,474	228,846	189,503
Apr.	172,935	169,737	241,845	191,450
May	180,559	184,281	248,382	
June	188,024	185,404	234,401	
July	189,470	194,763	207,094	
Aug.	192,853	194,946	205,506	
Sept.	194,138	201,214	193,999	
Oct.	176,000	191,367	157,675	
Nov.	176,898	202,742	146,638	
Dec.	178,573	186,257	143,001	

Gross Stocks

In the following table will be found the gross stocks of the various lines of the Pennsylvania, Lima and Kentucky oil fields, including oil received from other lines at the close of each month for the past three

	1929	1930	1931
Jan.	7,596,564	12,230,045	11,831,093
Feb.	8,738,835	12,991,561	11,806,488
Mar.	9,002,058	13,247,217	11,912,163
Apr.	8,978,172	13,233,961	11,044,487
May	8,903,560	13,052,953	
June	8,921,275	12,396,855	
July	9,311,595	12,268,543	
Aug.	9,440,643	12,047,051	
Sept.	9,443,067	12,512,018	
Oct.	9,441,101	12,437,555	
Nov.	9,868,538	11,851,380	
Dec.	11,353,953	11,761,953	

The Illinois Field

The following table gives the report of the Illinois Pipe Line Co. in Illinois:

Gross stocks, May 1	644,216.74
Runs from wells	394,806.16
Other receipts	23,966.66
Regular deliveries	255,533.77
Other deliveries	165,979.13

The amount of Illinois oil run by the Tide Water Pipe Co. in April was 27,008.88 bbls. Deliveries were 27,008.88 bbls. Adding these figures to those of the Illinois Pipe Line Co. makes the runs and deliveries as follows:

1931—	Runs	Deliveries
April	421,814.93	282,532.61
1930—		
January	543,387.95	493,293.91
February	546,416.23	414,536.59
March	631,944.45	469,119.58
April	530,074.22	509,304.48
May	605,147.27	504,069.24
June	572,662.57	468,658.81
July	604,529.54	388,454.47
August	594,542.12	375,742.43
September	457,001.11	371,691.43
October	478,442.12	328,688.73
November	432,784.68	355,403.13
December	556,418.78	363,719.45
1931—		
January	463,429.04	469,573.19
February	429,284.54	461,262.31
March	434,638.23	356,663.36

Tide Water Pipe Co., Ltd., also delivered in April 685,176.61 bbls. Oklahoma oil.

AVERAGE DAILY RECEIPTS OF CALIFORNIA CRUDE AND REFINED OIL AT ATLANTIC AND GULF PORTS

Average barrels per day in 1930-31—	ATLANTIC PORTS Baltimore	Boston	New York	Philadelphia	Others	Total	GULF COAST PORTS Galveston	New Orleans, Baton Rouge	Port Arthur, Sabine Pass	Tampa	Total	Total all ports
May	5,194	8,451	28,161	9,484	2,774	54,064	.....	.....	.....	.....	774	54,838
June	8,200	.....	32,933	20,767	3,333	65,233	.....	.....	.....	.....	2,400	67,733
July	17,355	7,774	43,419	23,829	6,453	98,330	.....	.....	.....	.....	4,645	103,484
August	7,413	5,743	33,963	21,236	5,258	81,613	.....	.....	.....	.....	97	81,710
September	6,300	6,400	25,600	13,400	9,567	61,267	.....	.....	.....	.....	2,433	63,700
October	3,516	3,065	27,358	16,419	4,903	54,161	.....	.....	.....	.....	5,355	59,516
November	3,367	6,233	33,300	17,733	4,600	70,733	.....	.....	.....	.....	4,800	75,533
December	5,516	4,323	30,645	9,678	3,580	53,742	.....	.....	.....	.....	4,645	58,387
January	3,387	6,613	21,968	14,678	11,096	57,742	.....	.....	.....	.....	6,129	63,871
February	5,787	2,713	29,143	4,000	5,750	47,393	.....	.....	.....	.....	3,750	51,143
March	10,032	1,611	21,338	7,324	8,774	49,129	.....	.....	.....	.....	6,355	55,484
April	5,133	.....	19,300	16,500	10,067	50,900	.....	.....	.....	.....	4,000	54,900

AVERAGE DAILY IMPORTS OF CRUDE AND REFINED OIL AT PRINCIPAL UNITED STATES PORTS

Average barrels per day in 1930-31—	ATLANTIC PORTS Baltimore	Boston	New York	Philadelphia	Others	Total	GULF COAST PORTS Galveston	New Orleans, Baton Rouge	Port Arthur, Sabine Pass	Tampa	Total	Total all ports
May	24,129	9,322	174,194	29,291	38,326	275,161	8,194	11,548	2,935	1,323	24,000	299,161
June	51,533	15,667	121,067	45,033	25,033	258,333	4,413	17,267	3,167	1,333	25,300	283,633
July	42,097	9,548	154,968	27,935	36,033	280,580	5,673	9,161	2,097	2,387	19,323	299,903
August	39,033	4,484	145,613	33,355	25,097	247,581	5,419	9,333	8,548	3,000	26,290	276,871
September	38,867	5,533	156,233	24,500	35,567	258,400	6,433	12,234	.....	2,800	22,467	280,867
October	19,839	11,742	146,194	35,355	26,967	240,097	6,065	7,067	2,774	2,545	18,451	258,548
November	29,633	25,900	124,633	34,467	24,667	261,300	3,467	7,366	.....	1,767	11,600	272,900
December	31,419	14,033	122,774	32,839	33,774	234,839	6,290	10,613	2,097	290	19,290	254,129
January	17,613	13,519	154,225	33,903	30,613	249,871	2,032	11,677	2,097	2,097	18,903	267,774
February	31,321	16,929	127,786	31,714	26,857	234,607	4,536	11,571	.....	536	16,643	251,250
March	37,645	15,935	141,160	26,290	21,129	238,161	4,065	2,580	.....	1,968	8,613	246,774
April	35,000	15,333	105,000	29,767	30,533	215,633	2,733	3,400	.....	.....	6,133	221,966

GROSS PRODUCTION OF CRUDE OIL IN THE UNITED STATES FOR 12 MONTHS

(In Barrels of 42 Gallons)

1930—		California	Oklahoma	Texas	Kansas	Arkansas	Louisiana	Rocky Mts.	Eastern	Total
April:	Month	18,768,743	19,541,310	24,799,763	3,734,351	1,724,460	1,909,552	2,334,310	4,267,000	77,069,89
	Daily average	625,625	651,377	826,659	124,475	57,482	63,652	77,827	142,900	2,568,99
May:	Month	19,044,444	20,587,661	26,219,488	3,978,385	1,659,895	1,907,482	2,545,219	4,414,000	80,376,77
	Daily average	614,337	664,113	845,786	128,335	53,545	61,548	82,749	142,387	2,592,78
June:	Month	18,020,795	19,754,700	25,643,705	3,765,060	1,704,060	1,925,621	2,519,190	4,288,000	77,621,13
	Daily average	600,693	658,490	854,790	125,502	56,802	64,187	83,973	142,933	2,587,37
July:	Month	18,502,034	18,032,514	25,972,521	3,541,409	1,713,630	2,079,769	3,275,894	4,330,000	77,348,82
	Daily average	606,517	581,694	837,856	114,239	55,280	67,089	105,674	139,548	2,491,88
August:	Month	18,770,466	17,162,034	25,069,598	3,491,530	1,700,102	2,151,120	3,193,341	4,417,000	74,955,19
	Daily average	605,499	553,614	808,696	112,630	54,842	69,391	103,011	110,226	2,417,90
September:	Month	17,984,306	16,509,130	23,111,823	3,405,510	1,583,286	2,066,060	3,239,010	4,396,000	71,337,16
	Daily average	599,477	550,304	770,394	113,517	52,776	68,935	107,967	113,200	2,374,57
October:	Month	18,244,053	16,632,528	23,636,553	3,571,913	1,636,552	2,142,885	3,225,550	4,627,000	72,707,03
	Daily average	588,518	536,533	762,147	115,223	52,792	69,135	104,050	117,000	2,345,25
November:	Month	18,109,459	14,941,770	22,035,222	3,459,230	1,557,270	2,136,948	2,957,100	4,325,000	69,419,99
	Daily average	603,648	498,059	734,507	115,311	51,939	71,231	98,570	107,400	2,280,61
December:	Month	17,786,728	15,067,103	21,810,359	3,422,661	1,599,951	2,157,534	3,118,663	4,328,000	69,281,99
	Daily average	572,765	485,713	703,560	110,731	51,321	69,598	100,603	107,355	2,202,64
1931—										
January:	Month	16,485,796	14,350,953	20,690,453	3,149,073	1,574,955	2,121,927	2,966,143	3,974,000	65,223,3
	Daily average	531,793	479,063	667,435	101,583	50,805	68,772	95,682	108,839	2,103,9
February:	Month	14,950,932	13,371,876	18,964,596	3,389,016	1,402,492	1,981,476	2,747,034	3,139,000	59,896,4
	Daily average	533,248	477,567	677,307	120,322	50,089	70,767	98,108	111,750	2,139,1
March:	Month	16,264,843	16,436,341	22,975,309	3,498,598	1,444,941	2,053,197	2,897,735	3,974,000	69,019,2
	Daily average	527,898	536,011	741,139	112,858	46,611	65,587	93,475	108,339	2,226,4
Total 12 months		213,312,590	202,871,747	280,920,388	42,396,738	19,292,225	24,545,941	35,039,862	48,656,000	862,056,4